

THE IRON AGE

THE NATIONAL METALWORKING WEEKLY

September 7, 1950



**HYDRAULIC
MECHANICAL**

400 ton Verson hydraulic press brake straightening a 6 inch steel plate.

UNIV. OF MICHIGAN

SEP 8 1950

EAST ENGINEERING

*For
Heavy
Plate Work*

TRADE **Verson** MARK

**PRESS
BRAKES**

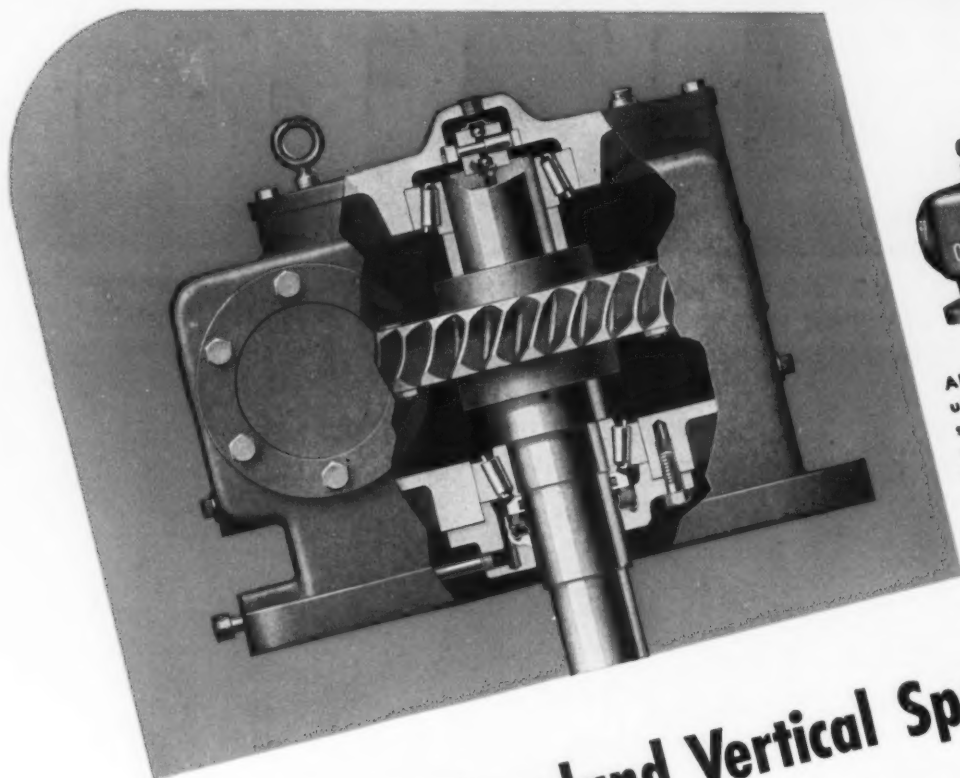
1200 ton Verson mechanical press brake bends 20 foot lengths of 1" steel plate in one stroke for Continental Foundry and Machine Company of East Chicago, Indiana.

VERSON ALLSTEEL PRESS CO.

Chicago and Dallas

See our exhibit at the National Metal Show

In addition to press brakes Verson manufactures a complete line of mechanical and hydraulic presses, die cushions and tooling.



Above—Exterior view Type ND unit. NU unit (not shown) has slow-speed shaft extending up. At left—Cutaway section to show tapered roller bearings on gear shaft, positive face-type oil seal, unique lubricating pump and oil drain at base of housing.

A new series of Cleveland Vertical Speed Reducers

- NU and ND worm gear units—in seven sizes each (50 to 500) are ready for prompt delivery. They are particularly suited to such equipment as agitators and mixers, and to overhead chain conveyors as well.

Outstanding features which insure that these new vertical drives will deliver long and trouble-free service are:

Extra heavy tapered roller bearings on gear shaft.
Continuous lubrication of top bearing by positively driven pump mounted on upper end of gear shaft (on lower end in Type NU).
Positive face-type oil seal below lower gear shaft bearing to prevent leakage.

Heavy base flange extends around all four sides. All parts liberally sized and precision built.

Write for Bulletin 125 for full description of Types NU and ND, including capacity charts and dimension data. The Cleveland Worm & Gear Co., 3252 East 80th Street, Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers, Limited.



CLEVELAND
Worm Gear

Speed Reducers

VARIETY IN FORGINGS



Parts for rolling mill. Housing screws: length, $65\frac{1}{4}$ in.; thread diam, 10 in. Screw boxes: length, $29\frac{3}{4}$ in.; max diam, 17 in. Treated and tested, finish-machined.



Each year Bethlehem produces an almost endless variety of forgings—small ones, massive giants, and every size in between—for a very great range of applications.

Pictured here are three jobs chosen at random. They well illustrate the point we have just mentioned. Widely-differing types; a wide spread of weights.

Our facilities and experience enable us to do the forging job you want, whether it's on the small side or heavy tonnage. By all means check with us before placing future business. We'll co-operate in every way.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

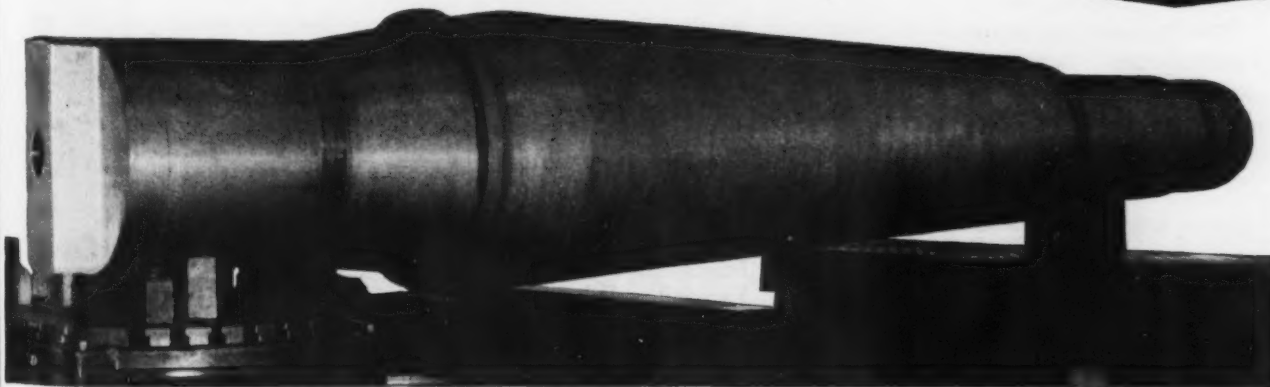
On the Pacific Coast Bethlehem products are sold by

Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation

◆ Impeller forging for wind-tunnel blower. OD, 70 in.; bore, $9\frac{1}{8}$ in.; thickness, 22 in.; wt, 15,000 lb. Alloy steel, treated and tested. Rough-machined with allowance for customer to finish-machine.

◆ Main shaft for crusher. Max diam, $44\frac{1}{4}$ in.; axial bore diam, 6 in.; length, 21 ft 6 in.; wt, 67,500 lb. $3\frac{1}{4}$ - $3\frac{3}{4}$ pct nickel steel, treated and tested.



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THE IRON AGE

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Special Article



Economical forging operations depend upon simple, balanced die design and proper die material selection. Part I of this two-part article tells how to simplify die designs in order to achieve balanced-section forgings. These mean lower cost forging operations and simplify subsequent finishing and heat treating.—p. 99.

Issue Highlights



Accurate aluminum core boxes can now be produced at lower cost than those made of wood. By this new method, foundries can greatly reduce overall coremaking costs, storage and handling. Highly skilled patternmakers are not required.—p. 104.



Wider use of movable steel partitions has been one factor in the increased demand for cold-rolled sheets. These units, only a fourth as heavy as masonry construction, are mobile and fireproof. Their appearance is functional, their maintenance, low. They help reduce noise levels.—p. 107.



NMTBA's Tell Berna charges that while the U. S. cuts off machine tool exports to Russia and her satellites, European nations are selling to them. Moreover, he charges, these same European countries are receiving ECA aid to help rebuild their machine tool industries.—p. 121.



The Federal Government has jumped into the nonferrous metals field with both feet. It will spend \$5 million to reactivate idle nickel facilities at Nicaro, Cuba, and \$9 million to reopen 5 magnesium plants.—p. 124.



Labor Leaders, fearful of a wage-price freeze are already hard at work hammering out fifth-round wage demands. If they are successful they will inevitably bring about a showdown on this question, whether President Truman wants it or not.—p. 125.

Coming Next Week



A high-strength 7 pct Mn alloy of titanium for sheet applications is now available. Also, a 4 pct Mn, 4 pct Al titanium alloy has been developed for high strength bar applications. The alloys are transformation hardening of the two-phase type. The sheet grade has a minimum tensile strength of 130,000 psi.

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RESEARCH KEEPS

B.F. Goodrich

FIRST IN RUBBER



Less belt damage, less "spill" with B. F. Goodrich cord belts

THIS B. F. Goodrich oilproof beltroad handles washed and sized coal from plant to river barges on a retractable conveyor system. Cord belts keep centered on idlers, require less maintenance because cords are free to flex. No spillage; troughs better even when running empty. Longer centers, higher lifts can be used. Creasing action between idlers is eliminated.

Each lengthwise cord in this B. F. Goodrich belt is completely surrounded by rubber—no cross threads tie them together. The rubber-borne cord body has practically the same impact resistance as the cover itself. Cords are free to "give" when an impact

occurs. It distorts temporarily, distributing and absorbing a shock that would damage stiff, unyielding plies.

In addition to the regular cord body in a B. F. Goodrich cord belt, a patented *Transcord breaker* has been added. It's an extra layer of parallel cords in rubber, placed across belt width.

The impact cushion of the cord belt resists cuts and gouges; the *Transcord breaker* keeps the cover from stretching beyond elastic limits, provides better adhesion between cover and carcass. With each tightly twisted cord completely sealed in rubber, the cord belt resists effects of acid materials, moisture, mildew.

The first B. F. Goodrich cord belt ever made is still on the job after 12 years and over 14 million tons of coal handling. The cord belt was developed by B. F. Goodrich for tough coal and rock hauling jobs. Call in your local BFG distributor, or write: The B. F. Goodrich Company, Industrial and General Products Division, Akron, Ohio.

Conveyor Belts BY
B.F. Goodrich
RUBBER FOR INDUSTRY

Editorial

The Forgotten Man Is Remembered

NO, the forgotten man is not the "little" man, the "big" man, the office worker, Henry Smith or Mary Jones of the New Deal days. Not at all. The forgotten man in past years has been the foreman.

But now, in many companies, he is coming into his own. Or at least these companies are trying to have him come into his own. It isn't an easy job because management often forgot the foreman.

In the late 30's when unions were getting started the foreman was sidetracked. Union bargainers went to the top. The foreman was openly sneered at by many workers and he didn't get too much support from top leaders.

The reason he didn't was because decisions had to be made fast. Plants could not be closed. The union was on the march and had to be reckoned with. So, as a byproduct the one man who represented management to the workers on the front lines was unintentionally bypassed in many companies.

It even went so far that some executives forgot the foreman needed raises too. Some did not get them. Now things like that are outdated—fortunately.

What has management found out about its foremen? It has found out plenty when it wants to look. While the theme song has been "tell the public, tell the worker" many firms have not given too much attention to telling the foreman. Studies show that he could know a lot more about free enterprise than he does. Past gripes have not always made him a ready listener. The type of training he has had has not always made him a good convert.

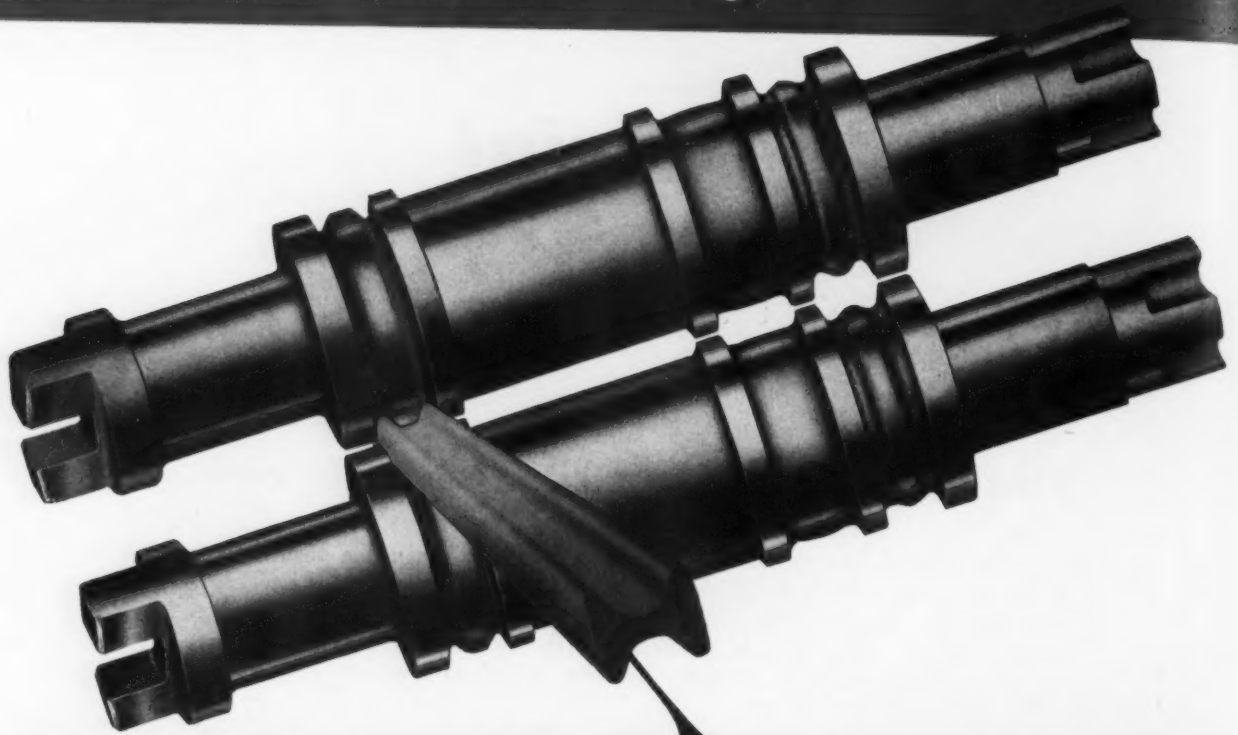
The time is now ripe to make the drive for better business understanding take the three-pronged approach: The public, the worker and the foreman. The foreman is the man who can save you money. He is the one who can improve labor management; produce a better relationship between company and employee. He is the one who must administer a lot of your ideas. If he does not know the fundamentals or believe in them he can do you more harm than good.

Take him into your confidence. Tell him as much as you can. Don't let him learn what you are doing from outsiders. Don't pass him up as you deal with union stewards and local leaders. Keep him in the know. Tell him the business facts of life. Look on him as one of your best helpers in this business. It will pay dividends.

Tom C. Campbell

Editor

Technique for Rolling Bloom Blanks



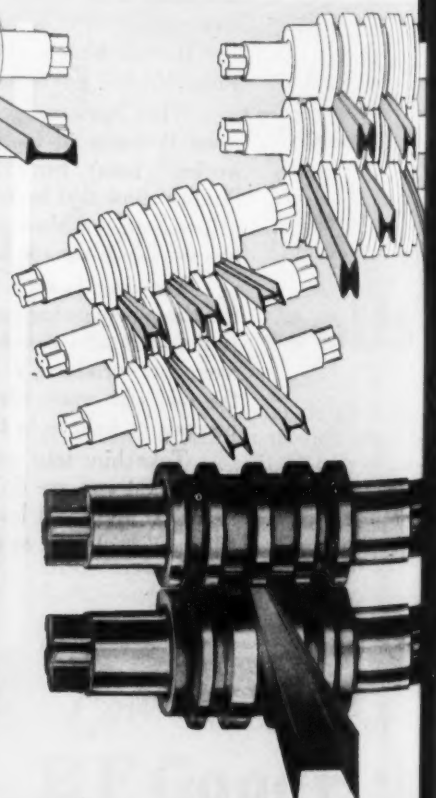
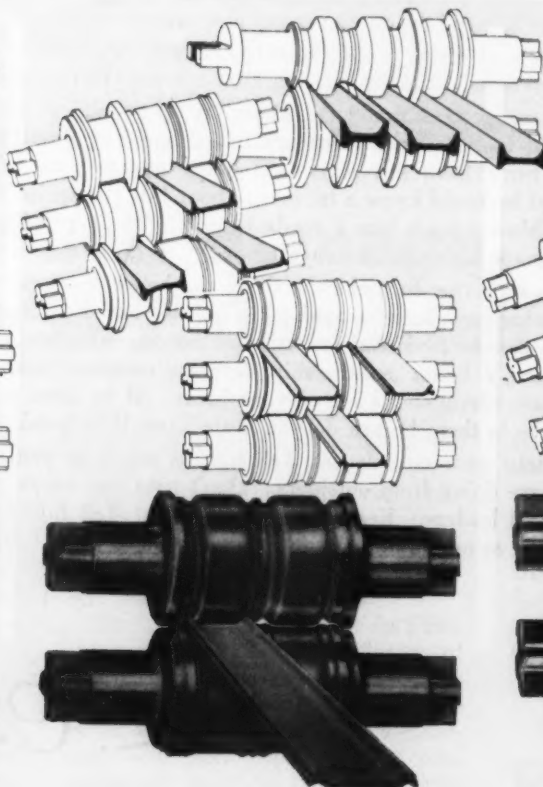
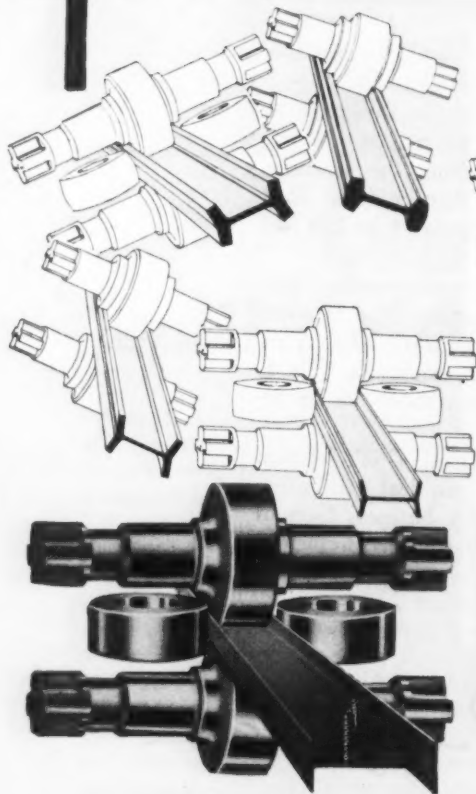
UNIVERSAL SHAPES

BEAMS

PIILING BARS

CHANNELS

"H" BEAMS



PITTSBURGH

NEWSFRONT

NEWS, METHODS AND PRODUCT FORECAST

► The long dreamed of idea of replacing much of the coke charge in a blast furnace with another source of carbon may be nearing reality. The proposed plan would also permit fuller utilization of oxygen in blast furnace smelting. The work is still in the engineering stage and no further details can be released now.

► The auto industry has a new term to describe the various kinds of work stoppages that hit it in the wake of rising living costs. "Trained wildcats" is the term used to describe the new forms of pressure for higher pay.

► Although the terrific demand for motor cars has sluffed off from the peak that followed the outbreak of the Korean war, only the confirmed optimists believe it will stay where it is. For one thing, another cut in rubber quotas could send demand up; the coming shortage in sheets is another. Elimination of the spare tire would ease the effect of the rubber quota cut but steel is another matter.

But in the meantime many dealers are not interested in trade-ins; delivery times are shorter and some discounting is reported.

► Steel users who months ago signed up for conversion ingots are now patting themselves on the back—if they got good ingots. But some of the mills making conversion steel are not too happy about it—some of their contracts are being carried at a loss.

► Companies who make steel mill equipment got a tremendous volume of orders in July; many bids that had been pending for months suddenly turned into orders. Some shops report that their backlogs are so heavy that they will take far more than their normal steel quotas. As a result, some steel mill expansion plans are going to have rough going and some are actually in danger of critical delay.

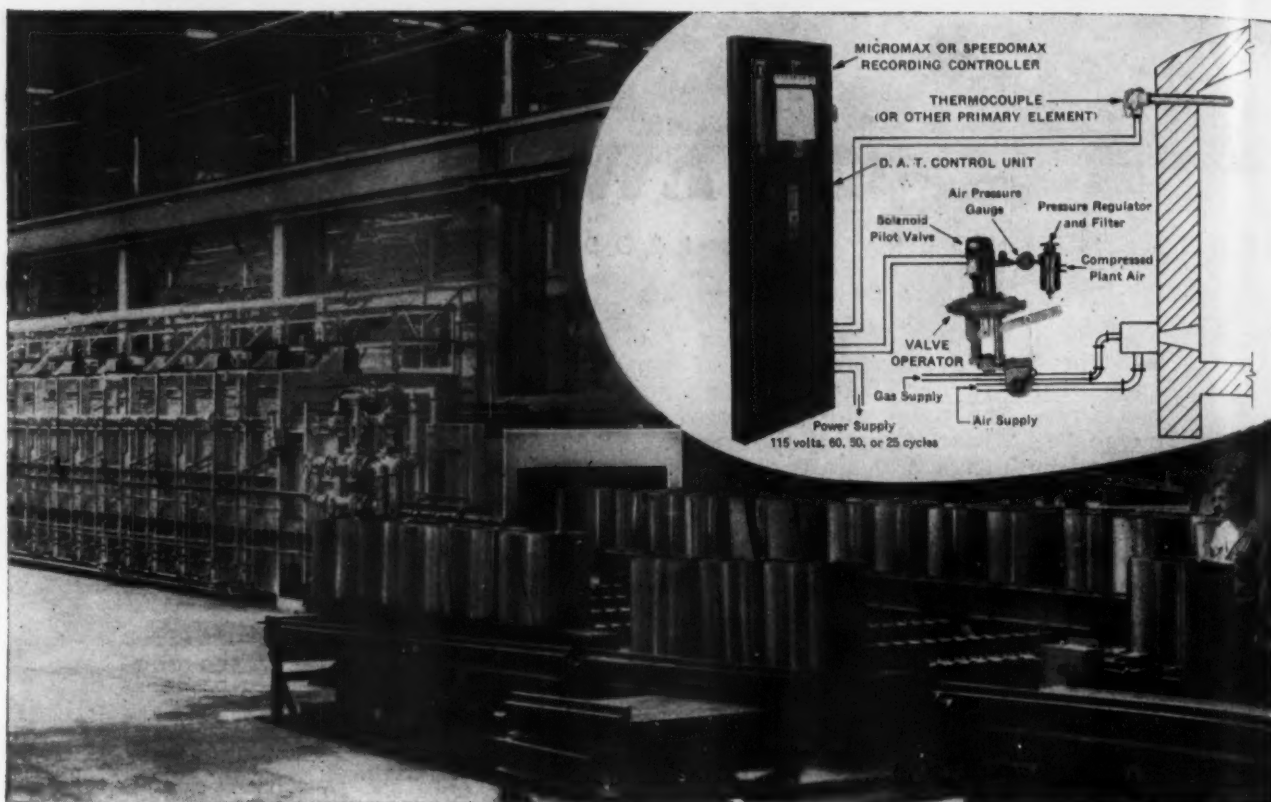
► The extreme shortage of zinc has pushed back deliveries on die-cast products and stepped up interest in gray iron castings wherever the latter can be substituted. This is particularly true in hardware items. Pig iron is still in far better supply than steel or nonferrous metals.

► Experimental work is now in progress on forged titanium propeller blades. This metal's resistance to erosion is one of the factors behind the project. A titanium alloy of 200,000 psi tensile strength with good ductility is needed for best performance. Such an alloy is not now commercially available.

► The Government is taking steps to relieve the acute shortage of nickel by spending \$5 million to restore the idle facilities at Nicaro, Cuba. It will also spend \$9 million to reopen five magnesium plants to meet higher demand of the aircraft program.

► Steel buyers are finding that they can no longer get carbon steel by buying stainless at the same time, as they could not so long ago. Stainless is now strong enough to stand on its own feet—though a little groggy from an overdose of orders.

► A "fluosolid" system of beneficiation is being tried experimentally on low grade iron ore. This pyro-metallurgical operation suspends crushed solids in a hot air stream and burns out certain impurities. The technique has been used in the petroleum industry since the early part of World War II for cracking oil vapors.



One of four 119-foot annealing furnaces built by Surface Combustion Co., and The Electric Furnace Co., for Scovill Manufacturing Company's new \$10 million continuous strip mill. Crediting L&N D.A.T. pyrometric control on all

these furnaces, Scovill says: "D.A.T. is taking a big part in helping us turn out the most uniform, high-quality brass we've ever made." Sheet is annealed in 2,000-lb coils; capacity is 32,500 lbs. per hour per furnace.

THIS "PACKAGE" OF CONTROL FITS ITSELF TO FURNACE NEEDS

And Only L&N Can Supply All Its Features!

SCOVILL'S latest success in controlling temperatures in brass strip-annealing furnaces is doubly interesting because it shows what can be done with other thousands of industrial furnaces. Small units may need only one instrument, instead of Scovill's five per furnace, but the principle's the same. Any furnace which can be controlled by turning fuel "on" at a predetermined low temperature, and turning it "off" at a predetermined high, will get its best possible regulation by D.A.T. Control.

D.A.T. excels for two reasons. First, it takes the "predetermined" out of the on-off action. Second, it adds full proportioning action. Instead of operating at predetermined temperatures, D.A.T. acts earlier or later, depending on change in heat demand. Only D.A.T. supplies all these features.

Increased production resulting from unusual uniformity is the great advantage of D.A.T. but other points are worth remembering: (1) Fuel can often be saved because less heat is lost up the stack. (2) Valve and burner sizes are not particularly critical. (3) D.A.T. can often modernize an old furnace, because it's so easy to install.

D.A.T. is just one of several L&N Controls. Call us for service or information in selecting equipment for any temperature-control problem. Address nearest office or 4956 Stenton Ave., Philadelphia 44, Pa.

TYPICAL RESULTS

D.A.T. exactly adapts its action to the upsets, load changes and lags of the furnace. This means it holds temperature in line for all normal changes in furnace charge, ambient temperature, temperature control point, etc.

D.A.T. offsets many inherent lags or delays in "sensing" temperature changes, such as that due to thermocouple protecting tubes.

D.A.T. operates equally well on furnaces of full-muffle, semi-muffle, open firing and conventional radiant-tube design.



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War Orders Hitting Market

Buyers Scrambling to Cover

Some Items Already Critical

The Iron Age

SUMMARY

IRON AND STEEL INDUSTRY TRENDS

WHILE false prophets try to minimize the impact of military buildup on our economy, the steel market this week is gasping from an enveloping assault of full-blown hysteria. Defense orders are increasing, and they are hitting critical spots in the steel market. The explosions heard from steel consumers, who are getting their quotas slashed left and right, are louder than a string of Chinese firecrackers.

This does not mean that our peacetime economy is going to pot in a hurry. But it does mean that some of the cream is being skimmed off—there just won't be as much butter to spread 'round. Purchasing agents know this, and they are making every conceivable move to strengthen their inventories of steel and other scarce materials before their efforts become stymied by the controls they know are coming.

The Real Rub—No Slack

The real rub is that there is no slack which can be taken up by defense orders, as there was before the last war. In 1939 the last year before war orders really boosted steelmaking, the steel industry operated at an average of 64.5 pct of rated capacity. But when the fighting broke out in Korea steelmaking operations were at 100 pct of capacity, despite the fact that the steel industry had boosted its capacity by 20 pct. And 99 pct of the steel being shipped was for peacetime use. Although consumers have been receiving record shipments of steel, their own record-breaking manufacturing operations have chewed it up as fast as it was received.

The half-billion dollar increase in the tank program is already being felt. Steel companies who have received letters of intent from manufacturers of tanks and other armored vehicles, have started rearranging facilities and hiring more workers to produce armor plate.

Requirements for the expanded military aircraft program are showing up in an increased demand for stainless steels. Demand for alloy steel is stronger than at any time since the last war. Fourth quarter order books on both electric furnace and openhearth alloys are jammed; producers could take orders for first quarter '51 if they wanted to.

Nonmilitary Consumers Take Substitutes

Alloy producers are now turning down orders for high-nickel alloys unless they bear a defense label. Nonmilitary consumers are being forced to accept substitutes. Within the next 2 months the aircraft program alone may be consuming from 8 to 10 pct of all alloy bars produced.

On top of this, diversion of nickel to the strategic stockpile has resulted in further cuts in allotments. Producers this month expect to receive only about half as much nickel as they were getting a few months ago. This will call for real belt-tightening within 3 months. Columbia supplies are more critical, if possible, than nickel—scarcely enough to meet requirements of the aircraft program.

In order to help relieve the acute shortage of nickel the Federal Government will spend \$5 million to reactivate the idle nickel facilities at Nicaro, Cuba, THE IRON AGE learned. An additional \$9 million will be spent to reopen five magnesium plants, vital to the aircraft program.

Play-By-Play Sell-Out

Tinplate inventories in the hands of can makers are very low, despite the fact that the canning season is in full swing. It has been aggravated by scare buying of food products. The shortage of plates is forcing some consumers to turn to premium-priced floor plates—when they can get them. Cold-rolled sheets are as hard to get as Fort Knox gold. Items, such as wire, which were easy to get 3 months ago are sold out for the year. Warehouse steel is also tighter, warehouses reporting their quotas cut.

(Nonferrous summary, p. 154)

You benefit from this dramatic new campaign in the



Can you find the clue...



...to quality? X marks the spot...



PHILLIPS SCREW

There's no mystery to quality when you know what clue to look for. Phillips Cross-Recessed-Head Screws are proof of extra care in today's manufacture. They assure lasting, creep-free tightness at all points of fastening. Be on the lookout for Phillips Screws... used on everything from streamlined cars to modern hearing aids.

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Public urged to look for Phillips Screws
—the clue to quality... found on
all modern products

BEGINNING AUGUST 26, a striking campaign on Phillips Screws was launched in The Saturday Evening Post. Aimed at the general public, it tells 14 million readers to look for the mark of extra quality in well-built products... *the identifying X that appears on the head of Phillips Cross-Recessed-Head Screws.*

Whether you use Phillips wood screws, machine screws or tapping screws, you benefit from this forceful quality story. Remember, too, when you use Phillips Screws you build a better product... save time, money, work-hours.

Be sure to put the "clue" to extra quality in your product.

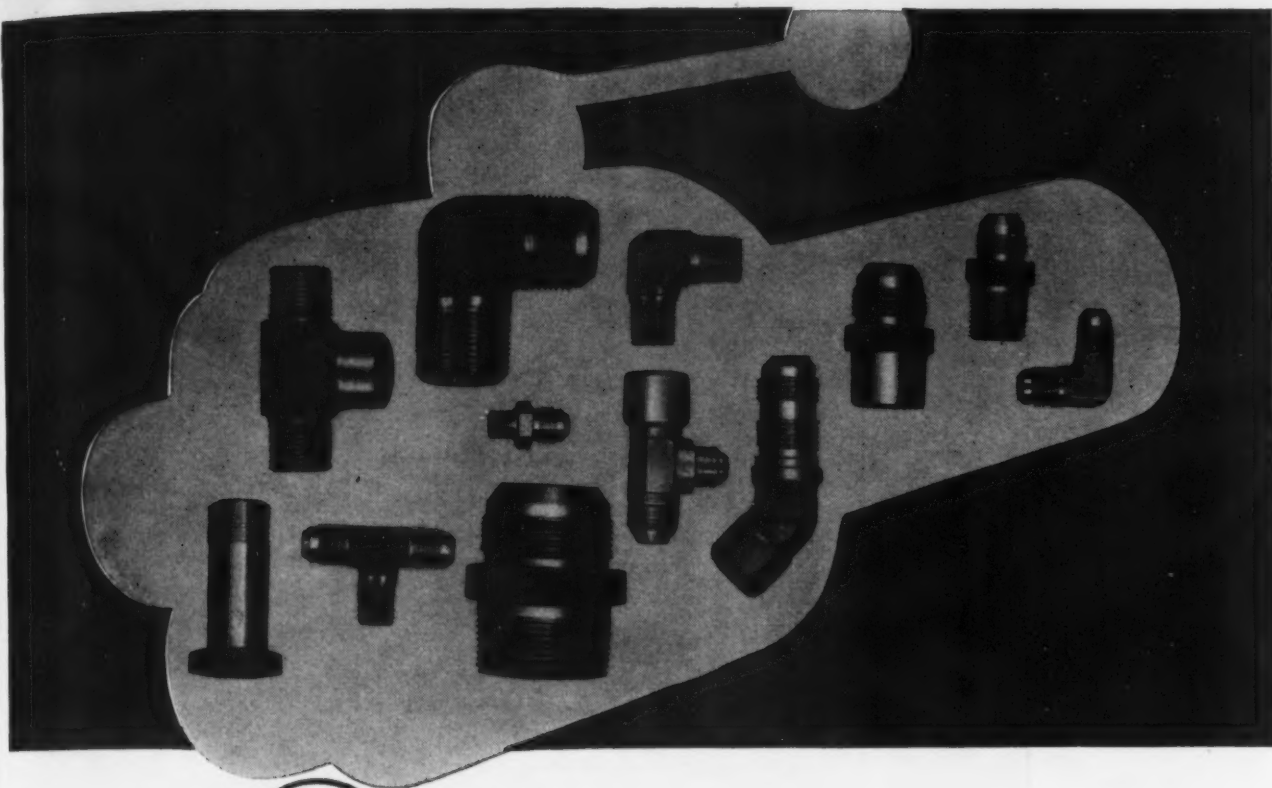
PHILLIPS Cross-Recessed-Head SCREWS

X marks the spot... the mark of extra quality

AMERICAN SCREW CO. • THE BLAKE & JOHNSON CO. • CAMCAR SCREW & MFG. CORP. • CENTRAL SCREW CO. • CONTINENTAL SCREW CO. • ELCO TOOL & SCREW CORP. • GREAT LAKES SCREW CORP. • THE H. M. HARPER CO. • NATIONAL LOCK CO. • PARKER-KALON CORP. • PHEOLL MANUFACTURING CO. • ROCKFORD SCREW PRODUCTS CO. • SCOVILL MANUFACTURING CO. • SHAKEPROOF INC. • THE SOUTHTONING HDWE. MFG. CO. • WALES-BEECH CORP.

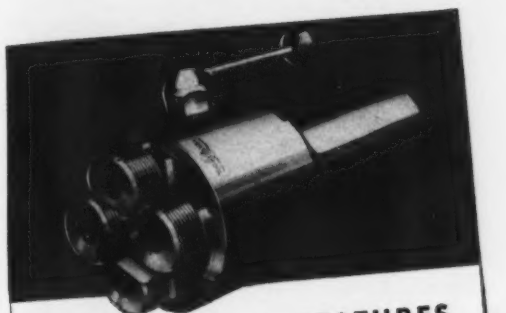


THE FASTENERS OF TODAY... AND OF THE FUTURE



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3. Vers-O-Tool circular chasers are regrindable through a full 270°—an exclusive feature, for longer life.
4. Circular ground thread chasers are available in a full range of thread sizes—even down to 260 TPI.

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And that's why you'll find Vers-O-Tools used as the standard for production at Parker. They've found, through carefully-checked records, that no other die-heads can deliver the same exacting high quality on long, tight-schedule production runs.

There are other reasons, too: lower chaser costs, less tool inventory, faster machining time—all these tip the scales to Vers-O-Tools. For complete details on how they can improve quality and cut costs in your shop, ask for catalog D-49.

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Centrifuges • Contract Manufacturing

September 7, 1950

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AMS 6272
AMS 6280
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AMS 6324
AMS 6415
AN-QQ-756A
AMS 6320 (Hex)

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Popular Parable

Sir:

We were most impressed with the editorial entitled "Termites at Work" in the Apr. 20 issue and, with your permission, would like to reprint it in our plant publication, "The LeBlond News." We really thought it should be read by everyone here at LeBlond.

R. E. LaBONDE
Advertising Mgr.

R. K. LeBlond Machine Tool Co.
Cincinnati

Sir:

We are attaching a copy of the most recent issue of our "Kreolite News," on p. 11 of which is an editorial of yours headed "Termites at Work." I thought that it would be exceedingly timely and of interest to our readers.

F. W. CHERRINGTON
President

Jennison-Wright Corp.
Toledo

Sir:

Permission is requested to reprint the editorial, "Termites at Work," by Tom C. Campbell, from the Apr. 20 issue of THE IRON AGE, in our house organ, "The Monark."

J. HORNSBY
Editor

Federal Cartridge Corp.
Anoka, Minn.

Permission granted.—Ed.

Editorial Kudos

Sir:

I have been following your editorials in THE IRON AGE. I think you are doing a grand job and I hope you are receiving encouragement from a lot of other people. I am an individualist, and a stockholder in the biggest business in the world—the United States of America—but unfortunately, this institution is not run by business men.

My nominal status is that of a citizen and taxpayer; my job is a top Supervisor in an industrial establishment; I am sure I am just one of thousands who is puzzled at what is going on. It seems just like standing on the ground and looking up at an aerial battle almost out of sight and wondering who will win. Sometimes we also wonder, perhaps they do not feel the same about us, because we must look very small to them and it is probably rather puzzling to the anti-business people to know whom they are going to pin-point next in

their unbridled and senseless attacks.

The outcome of this contest between socialism and capitalism is most certainly going to determine the destiny of not only these United States of America but of the world. Is it not possible that we could be in a fight something like the one which was rather common years ago between a couple of farmers over the line fence—both were losers. Anyway, I appreciate what you are doing for me and a lot of other people. Thanks for listening.

F. A. KNAPP

Glenshaw, Pa.

Fe Wisdom

Sir:

We all got a good laugh out of the enclosed news report which came over our Associated Press wire this morning, and we thought you'd get a kick out of it, too: "THE TRADE PAPER 'IRON SAGE' SAYS TODAY..."

R. M. FRET
Night News Editor

Radio Station WWCA
Gary

Spanish Overture

Sir:

Why don't you tell something about the necessity of coming to an end with the economical isolation of Spain, brought about by the shortsightedness of some people in Washington? The United States is sending a lot of material and money to European countries that are communist minded; such material and money, which means many sacrifices to American taxpayers, can be used against the U. S. A. if the Korean conflict becomes a new world war. How many soldiers are those countries that received your economic help sending to help MacArthur?

The new 600,000-ton plant planned by the Spanish government is possibly going to be a nice 100 pct British piece of business. The machinery for this plant should come from American firms. Why not be friends before it is too late?

J. A. MORALES
Industrial Engineer

Madrid, Spain

Who Makes It Dept.

Sir:

One of our clients wishes to purchase a material which he calls Galvaloy. This is used to renew the galvanizing on metals where it has been scraped off or destroyed. The description of the material is that it came in a tube, is applied to the heated metal, and attaches similarly to the galvanizing. Will you please advise us who makes this and where we might buy it or some similar material.

A. D. COLLIER
President

Swan Lake Moulding Co.
Klamath Falls, Ore.

This product is manufactured by Metallurgy Products Co., 1353 E. 17th St., Los Angeles.—Ed.

Another cost-saving advantage for users of

B&W

TUBING...

PROPERTIES

To match production, fabrication, or end-use requirements

You have a wide choice of **B&W** MECHANICAL TUBING

TYPES—Seamless (hot finished, cold drawn or rockered.) Welded (from hot or cold rolled strip.)

GRADES—Carbon, Alloy, and Stainless Steels.

SIZES—Up to 9-5/8" O. D. in full range of wall thicknesses.

QUALITY—Open-hearth and electric furnace steels, including aircraft and magnaflex qualities.

CONDITION—Unannealed, annealed, tempered, normalized, or otherwise heat-treated as required.

SURFACE FINISHES—As rolled, as drawn, as welded, flash removed, turned, scale-free, and polished.

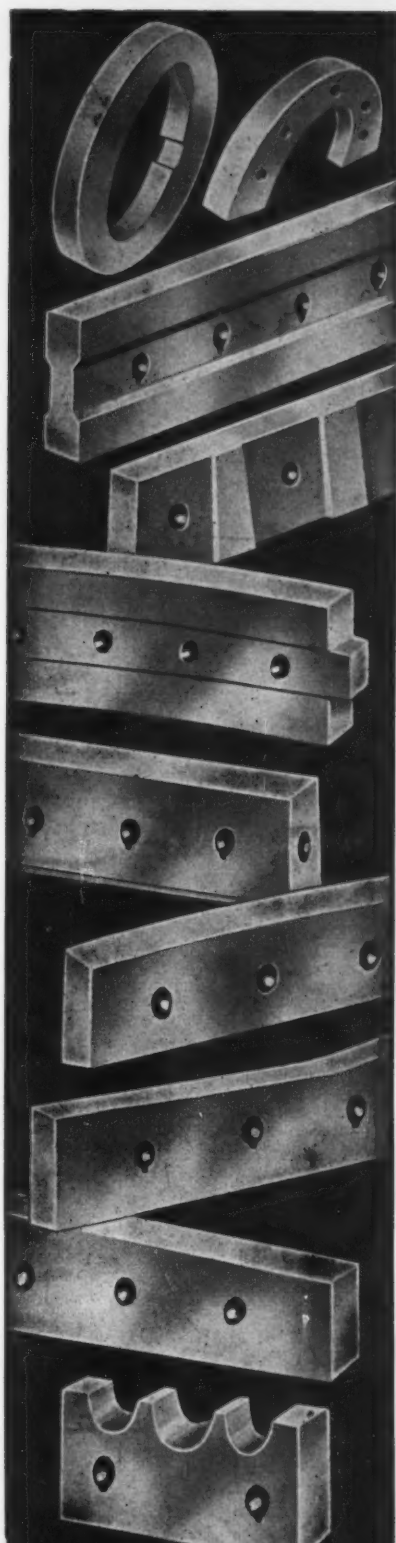
SHAPES—Round, square, rectangular, oval, streamlined, and special shapes.

FABRICATION—Upsetting, expanding, bending, safe-ending, and machining.

ASK YOUR B&W TUBE
REPRESENTATIVE...



B&W
SEAMLESS and WELDED
TUBES



Greater Tonnage
Per Edge of Blade

A

AMERICAN
SHEAR KNIFE CO.
HOMESTEAD · PENNSYLVANIA



Fatigue Cracks

By CHARLES T. POST

What Price Education?

With thousands of young hopefuls about to return to the preened ivy and polished marble of university campuses, it's only fair to toss out a gratuitous word of warning. If you want to get to the top in business, the eventual sheepskin may not do a darn bit of good.

A study of the American Institute of Management of the presidents of more than 200 leading companies designated as "excellently managed" shows that more than 25 pct did not go to college. The college of hard knocks graduated more than twice as many presidents as the top institution of formal learning, Yale. And of the 75 pct who went to college, 40 pct attended one of six colleges—Yale, Harvard, Cornell, California, Columbia, and Princeton. If you go to Siwash State you don't have a chance.

And remember this, Son. It takes time to get to the top. The average age of the 204 presidents is 58 years, with none under 40 and less than 1/2 of 1 pct over 80.

When you get ready to settle down, Connecticut is the place. The bigwigs cozy up to each other, there, the institute indicates, "creating an unusual opportunity for Connecticut residents to gain entrance to large business organizations."

When you get to the top don't forget old Uncle Charlie who told you how to do it.

Unsolvable

Every time someone hands us an allegedly unsolvable problem, we recall with feeling the sad case of Felt & Tarrant, Comptometer manufacturers. In an unguarded moment back in 1947, F. & T. ran a tongue-in-cheek advertisement offering \$1000 to anyone who could square the circle. It also dared any-

one to double the cube and trisect an angle.

"You are allowed to use a straight edge and a compass—but nothing else," the ad ran. "Please note: We're pretty sure the bet's safe. Because mathematicians have tried since antiquity to solve those three problems with only the tools mentioned. And they regretfully say it can't be done. . . ."

Since then, F. & T. has received about 250 solutions from amateur and professional mathematicians. They had to hire a college math instructor to go over the entries and point out the failure to do the job without some sort of modern assistance. Legal expense has mounted. A suit by a Caltech math instructor was dismissed 2 years ago. And just last month a University of California teaching assistant sued for \$1000, declaring he had solved all three problems in a few weeks' time and was tired of waiting for his money.

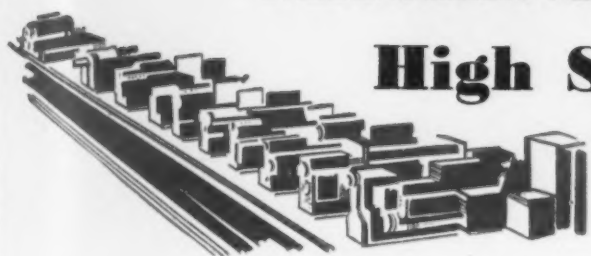
Puzzlers

The veil of mystery has been lifted concerning the volume of metal removed from a 2-in. diam bar by drilling perpendicular to its center line with a 2-in. diam drill (Aug. 24). The work sheet and isometric drawing in full color by Paul W. Zimmer of Republic Steel carries an air of authority. His answer of 5 1/3 cu in. checks with that of Arnold C. Brooks of Tiverton Machine Works, Tiverton, R.I. and with what our swami tells us.

If you want to easily figure how far the fly traveled last week, make a paper model of the room, then lay the surfaces out flat. A straight line still is the shortest distance between two points, and the fly crawled 40 ft by the time he had gone across the ceiling, side wall, and floor.

MACHINE TOOL

High Spots



Sales
Inquiries
and Production



By W. A. LLOYD

Reserves Cut Manpower—Scope of the machine tool industry's operating problems for the next 6 months became a little clearer this week as spokesmen for major segments of the industry, faced with a continuing high volume of orders, reported that many companies' manpower problems are more acute than at the start of World War II, due to the number of men, including some in executive positions, who are members of the reserves.

Several companies have reached a new 3-year high in August, despite price increases and extended deliveries and companies are trying to increase monthly shipments with the supply of manpower highly uncertain. One company reported a 6-month deferment for a skilled worker, but was told that the deferment would not be extended.

Log Jam in Detroit—In Detroit, the log jam in machine shops is

piling up. Machine tool ordering is continuing without a letup, although the amount of orders directly traceable to defense is still small. Delivery periods on standard tools have been extended by many suppliers to February and March and special tools are out to August 1951 and beyond. A tight coke situation created by a prolonged strike in the plant of a leading Detroit supplier could create a critical situation here on castings very quickly.

War Tools for Russia—In other areas, the rhubarb which Winston Churchill, Britain's wartime prime minister and leader of the Conservative party, stirred up over the sale of British machine tools to Russia brought forth blasts of indignation and demand for corrective action, including a statement by Tell Berna, general manager of National Machine Tool Builders Assn., Cleveland.

The complete story of Tell Berna's charges that machine tools are slipping behind the Iron Curtain appears on Page 121, News of Industry Section.

Sale of British machine tools to Russia is not new. It has been the source of justifiable indignation in the machine tool industry in this country for the past 3 years. The fact that other countries are also peddling machine tools to the Russians is perhaps more than anything else a commentary on the willingness of the U. S. government to dismiss ECA as a European re-

covery program per se. That some policing or direction of its secondary development is desirable from the standpoint of U. S. security is apparently irrelevant. The chicken has simply come home to roost.

Export Outfits—Two machine tool associations, Machine Affiliates, Inc., and Machine Affiliates Trading Corp. have been formed under the Export Trade Act (Webb-Pomerene Law) for the purpose of engaging in export trade. Machine Affiliates Inc., represents 17 manufacturers and Machine Affiliates Trading Corp. has 16 manufacturers.

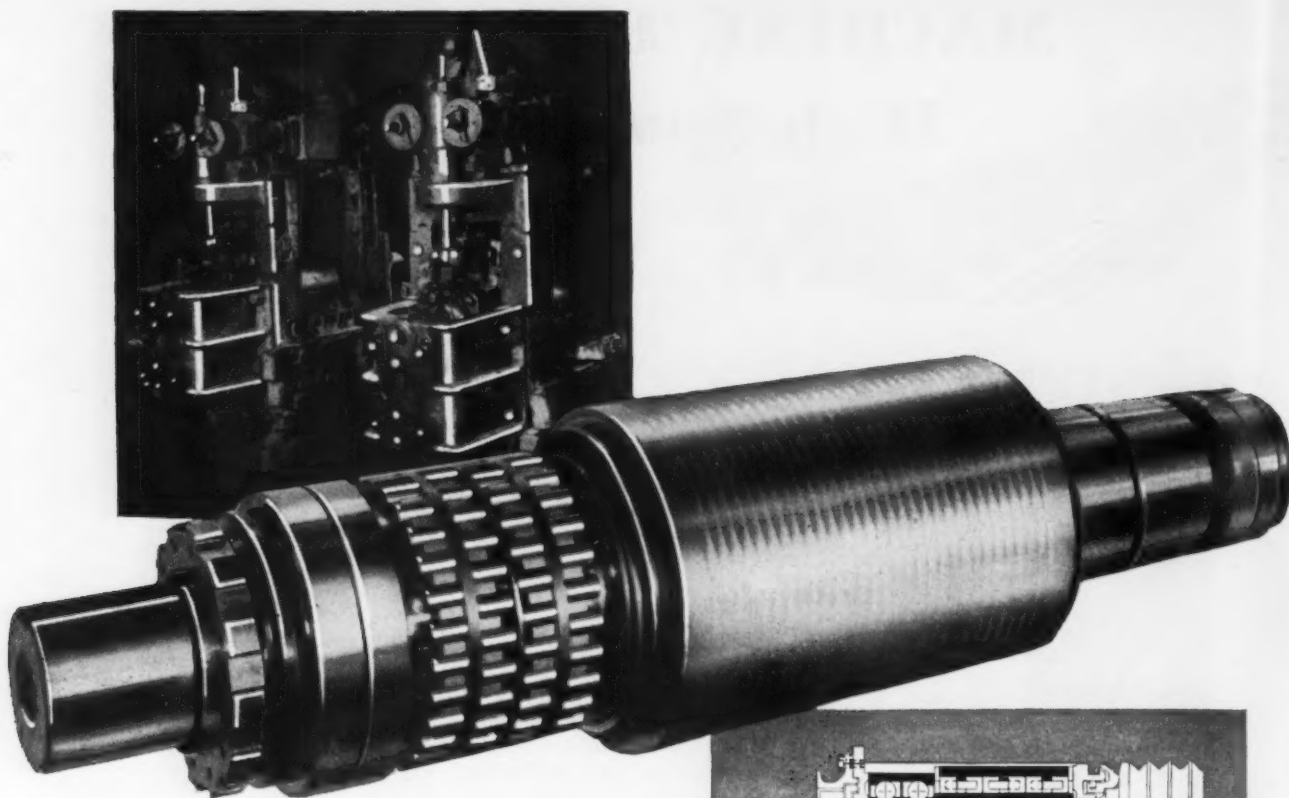
Machine Affiliates, Inc., with offices at 149 Broadway, New York, has two stockholders, Melvin Stone and Louise Stone, and sells machine tools for export to Latin American countries for the following manufacturers:

American Broach & Machine Co., Ann Arbor, Mich.; Gallmeyer & Livingston Co., Grand Rapids, Mich.; The Cincinnati Bickford Tool Co., The Cincinnati Electrical Tool Co., Cleveland Automatic Machine Co., The G. A. Gray Co., and The R. K. LeBlond Machine Tool Co., all of Cincinnati; Lima-Hamilton Corp., Niles Tool Works Division, Hamilton, Ohio; Elmes Engineering Division, American Steel Foundries, and The King Machine Tool Division, American Steel Foundries, both of Chicago; Sundstrand Machine Tool Co., Rockford, Ill.; George Gorton Machine Co. and Racine Tool & Machine Co., both of Racine, Wis.; Gould & Eberhardt, Inc., Irvington, N. J.; Lucas Machine Division, The New Britain Machine Co., and New Britain-Gridley Machine Division, The New Britain Machine Co., both of New Britain, Conn.; and Reed-Prentice Corp., Worcester, Mass.

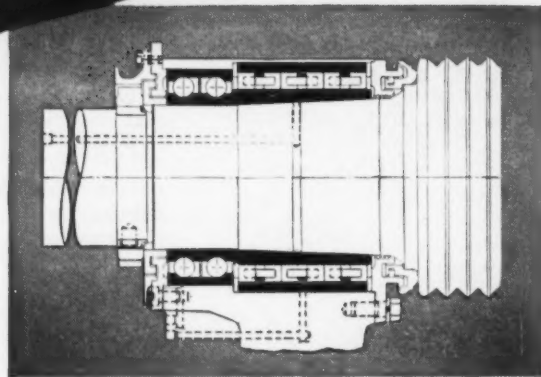
Machine Affiliates Trading Corp., with offices in care of the R. K. LeBlond Machine Tool Co., Hyde Park, Cincinnati, has 14 stockholders, including Machine Affiliates, Inc., New York, and the following manufacturers of machine tools:

The R. K. LeBlond Machine Tool Co., Cleveland Automatic Machine Co., The Cincinnati Electrical Tool Co., and The Cincinnati Bickford Tool Co., all of Cincinnati; Lima-Hamilton Corp., Hamilton, Ohio; George Gorton Machine Co. and Racine Tool & Machine Co., both of Racine, Wis.; The King Machine Tool Division of American Steel Foundries and Elmes Engineering Division of American Steel Foundries, both of Chicago; Sundstrand Machine Tool Co., Rockford, Ill.; American Broach & Machine Co., Ann Arbor, Mich.; Gallmeyer & Livingston Co., Grand Rapids, Mich.; Reed-Prentice Corp., Worcester, Mass.; Gould & Eberhardt, Inc., Irvington, N. J.; Lucas Machine Division of The New Britain Machine Co. and New Britain-Gridley Machine Division of The New Britain Machine Co., both of New Britain, Conn.

Officers of Machine Affiliates Trading Corp. are Melvin Stone, president; W. B. Tomlinson, vice-president and assistant secretary; Neil C. Schauer, vice president and assistant treasurer; and Edward G. Schultz, secretary and treasurer.



"HOT ROD" for rod mills

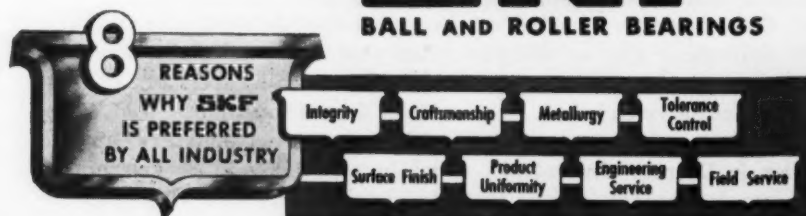


Continental Foundry and Machine Company has installed a three-strand roll neck bearing in a mid-west rod mill that races out rods, shift after shift—so fast, it could be called the "hot rod" of the steel industry. The new roll neck bearing, developed by SKF, is made up of a multi-row cylindrical roller bearing that carries the rolling load and angular contact ball bearings for axial stabilization of the rolls. It takes only a minute to mount or dismount the unit during roll changes thanks to SKF's oil injection method.

This is just another example of SKF's ability to put the right bearing in the right place. Continuing research, rigid adherence to strictest standards of manufacture and close inspection of every bearing are your assurance that SKF can help you design for great efficiency, effective performance. **SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.,—the** *Pioneers of the Deep Groove Ball Bearing, Spherical Roller Bearing, Self-Aligning Ball Bearing.* 7143

SKF

BALL AND ROLLER BEARINGS





TORRINGTON NEEDLE BEARINGS carry lubricant, too

To reduce the need for frequent service attention
in all types of machines, Torrington Needle Bearings
carry a large reserve of grease or oil.

The turned-in lips of the outer shell ride close to the shaft,
and form an effective seal that helps
retain lubricant and keep out dust and moisture.

Small diameter rollers carry an even protective film
to all bearing contact surfaces.

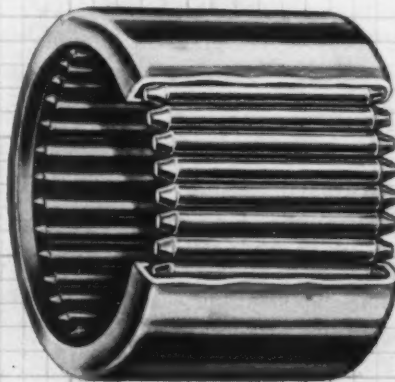
Often Needle Bearings can be lubricated for life at installation.

Let our engineers help you design efficient lubrication
and other Needle Bearing
advantages into your product.

THE TORRINGTON COMPANY

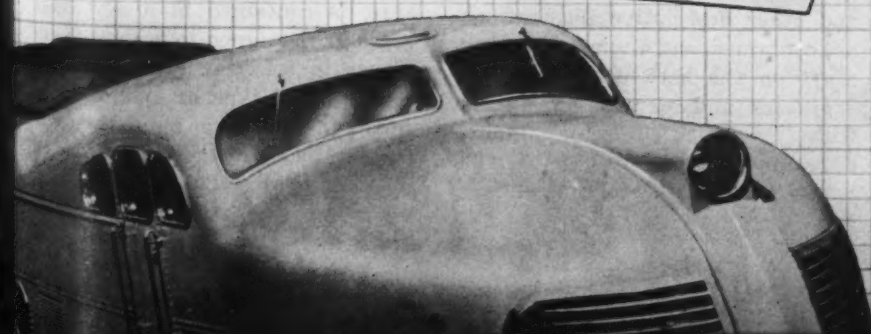
Torrington, Conn. • South Bend 21, Ind.

District Offices and Distributors in Principal Cities of United States and Canada



TORRINGTON *NEEDLE* BEARINGS

**NEEDLE
SPHERICAL ROLLER
TAPERED ROLLER
STRAIGHT ROLLER
BALL
NEEDLE ROLLERS**



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7143

FREE

USE POST CARD

PUBLICATIONS

Modern Dry Cyaniding

To cover latest developments in the modern dry (gas) cyaniding process, a new bulletin has been issued presenting the latest SC equipment and its applications for this field. The 4-p. bulletin tells a comprehensive story on application of the dry cyaniding process, and includes both liquid and quenching and slow cooling. Modern equipment and typical installations utilizing both continuous and batch-type units for large scale and limited production are described. *Surface Combustion Corp.*

For free copy insert No. 1 on postcard.

Useful Welding Data

"The ABC's of Welding High Tensile Steels," is the title of a new 12-p. booklet, compiled as a guide for buyers and users of low alloy, low hydrogen electrodes. In simple question and answer form, the booklet compares mild steel and low hydrogen electrodes, as related to preheating, underbead cracking, moisture in the arc and in the coating, burn-off rate, cost of operation, applications, and stress relieving of the weldments. *Arcos Corp.*

For free copy insert No. 2 on postcard.

Automatic Unloader

The Sahlin Iron Hand, a completely self-contained automatic unloader for removing sheet metal stampings from mechanical and hydraulic presses, is described in a new 8-p. illustrated booklet. Action photos and detailed drawings show the operation cycle and special features of the equipment which serves both as a safety device and production tool. Also in-

New publications that describe money saving equipment and services are available free and without obligation. Copies can be obtained by filling in the attached card and mailing it.

cluded are analyses of savings from typical installations, and instructions on use of the equipment. *Sahlin Engineering Co.*

For free copy insert No. 3 on postcard.

Fastener Facts

Interesting information on fastener engineering is presented in a new 32-p. booklet entitled "What's Your Fastener I. Q.?" The technical data is presented in an informal style, illustrated by cartoons, in question and answer form. Subjects covered include residual tension, stress conditions set up in different types of joints, wrenching torque, correct proportions of tensile strength and ductility in fasteners, and relative strengths of rough and fine threads. *Russell, Burdall & Ward Bolt & Nut Co.*

For free copy insert No. 4 on postcard.

Variable Transformers

Powerstat manually-operated and motor-driven variable transformers and line correctors are featured in a new 16-p. bulletin. Data is also included on Voltbox ac power supplies, as well as oil-cooled and explosion-proof Powerstats. Performance curves, graphs, wiring diagrams and other descriptive illustrations are contained, and a complete rating chart on the back cover provides engineers and purchasing agents with a quick selector index. *Superior Electric Co.*

For free copy insert No. 5 on postcard.

Adhesives Manual

Containing useful information and charts on the application of adhesive cements and compounds, a new 64-p. Engineers' Production Manual should prove of value to laboratory technicians, production men, engineers and anyone interested in the application of technical cements. *Sauereisen Cements Co.*

For free copy insert No. 6 on postcard.

Cleaner Air

Protection of air-powered tools, gages and process equipment against air-borne impurities is the subject of a new 8-p. bulletin. Equipment for removal of water, oil and pipe scale from compressed air systems is shown. Tables of prices and dimensions are supplemented by a table which makes it convenient for plant operating engineers and others to determine exactly how much entrained water is hampering the efficiency of their air distribution systems. *R. P. Adams Co., Inc.*

For free copy insert No. 7 on postcard.

For Pressure To 1500 Psi

Complete engineering data for Hydro-Line air and hydraulic cylinders, both high and low pressure, is contained in a new 32-p. catalog. Designed to assist the engineer in selecting and specifying the size and type of cylinder best suited for the job at hand, the catalog lists basic cylinder information

Turn to Page 138

BARBER-
COLMAN

HEAVY-CUT *Reamers*

RIGHT OR LEFT HAND SPIRAL



FOR

HEAVY STOCK REMOVAL

FREE CUTTING ACTION

CORE REAMING

FINAL FINISHING AND SIZING

THIS NEW DESIGN OFFERS
GREATER END CUTTING,
STRENGTH AND BLADE SUPPORT.

★ ★ ★ ★ ★

NEW 2° WEDGE, WITH BLADES
PIN-MOUNTED IN BACK,
PROVIDES CUTTING ACTION
EQUIVALENT TO SOLID DESIGN.

★ Roughing, Semi-Finishing, Finishing — these new "Heavy-Cut" Reamers produce better quality holes with fewer sharpenings. The rigidity and strength, produced by the action of the 2° wedge and reverse pin mounting, is equivalent to solid design — replacement blades offer long life, and cost saving advantages. Short style, Long style, Straight or Taper Shanks and Shell types offer a wide selection to meet a variety of production requirements. Check your reaming problems with a Barber-Colman representative today. You can save money on rough, semi-finish or finish reaming by using this new line of tools.

Barber-Colman Company

GENERAL OFFICES AND PLANT, 9936 LOOMIS ST., ROCKFORD, ILLINOIS, U. S. A.



September 7, 1950

NEW

PRODUCTION IDEAS

Continued

anode containers or elliptical in any desired lengths. *Hanson-Van Winkle-Munning Co.*

For more data insert No. 23 on postcard, p. 37.

Pipe Forming Machine

Simplifies, improves plate bending; handles 16 to 36-in. diam pipe.

A 1200-ton hydraulic bending press crimps the entire edge of a 20 ft 4 in. sheet in one stroke. The

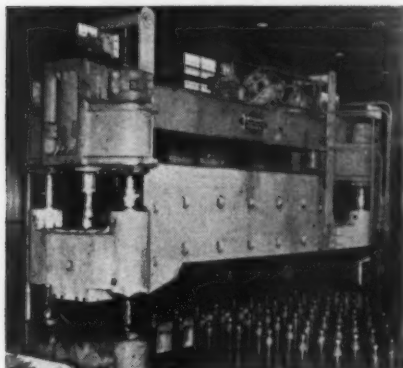


plate is moved into the machine over a die, crimped, retracted, rotated, and the other edge moved over the die and again crimped. This method of processing the entire side of the sheet at once is said

to be faster than the progressive crimping method. It provides a more uniform bend for the welding equipment. The machine has an overall length of 27 ft. It is powered by a 60 hp motor, has a self-contained pumping unit, and a 36 in. adjustable stroke. Geared to the speed of the welding equipment, its production is about 8 pieces per hr. *Birdsboro Steel Foundry & Machine Co.*

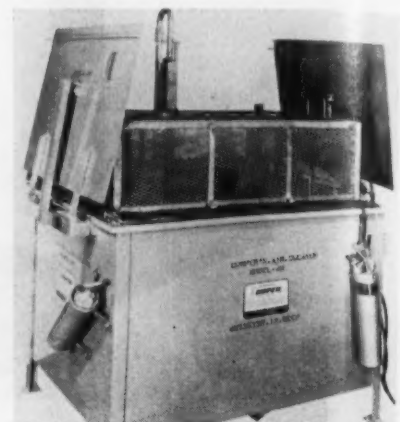
For more data insert No. 24 on postcard, p. 37.

Agitating-Dipping Machine

Designed for automatic cleaning of metal parts; rust-preventive dipping.

A pneumatic agitating and dipping machine, designed for automatic cleaning of metal parts, fingerprint removing, dipping of spare parts in rust preventives, oils and grease, and dipping of packages in wax, consists of a sturdily constructed steel tank, with bottom drain and overflow near top. A rectangular, removable frame fitting within the inside area of the tank supports a platform, basket or both. Agitation consists of a vertical stroke of 5 in. with a speed of 18 to 20 strokes

per min. The machine can be furnished so that only the rack will dip, eliminating the agitation in



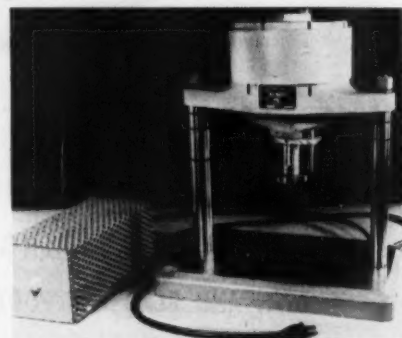
the bottom. Models are unheated, electric or gas heated. They operate by pushbutton. *D. C. Cooper Co.*

For more data insert No. 25 on postcard, p. 37.

Electric Impact Hammer

Delivers impact up to 6000 lb. follows with 2000-lb "squeeze."

Known as the Electropress, a new electric impact hammer delivers an impact up to 6000 lb (figured on work done through a



distance of 1/64 in.) and follows through with a pressure of 2000 lb at the end of the stroke. Both impact and pressure may be controlled with the addition of an impact control that will deliver any desired impact from a light blow to its rated maximum. Work is accomplished through use of forces produced by direct electromagnetic attraction. The Electropress is all electric, operating from any 115 v. ac outlet. *Black & Webster, Inc.*

For more data insert No. 26 on postcard, p. 37.

Arc Welding Process

Uses high welding current densities, allows use of high welding speeds.

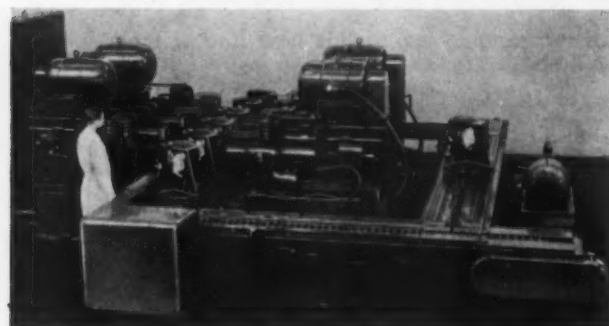
The new Hidensity process uses 3/32 or 5/64-in. diam electrode

Turn to Page 142

Special Drilling Machine

Drills and bores aircraft cylinder heads at rate of 80 pieces per hr.

The machine drills the valve guide holes and rough forms valve pockets and spring compartments. In a second operation, it finish

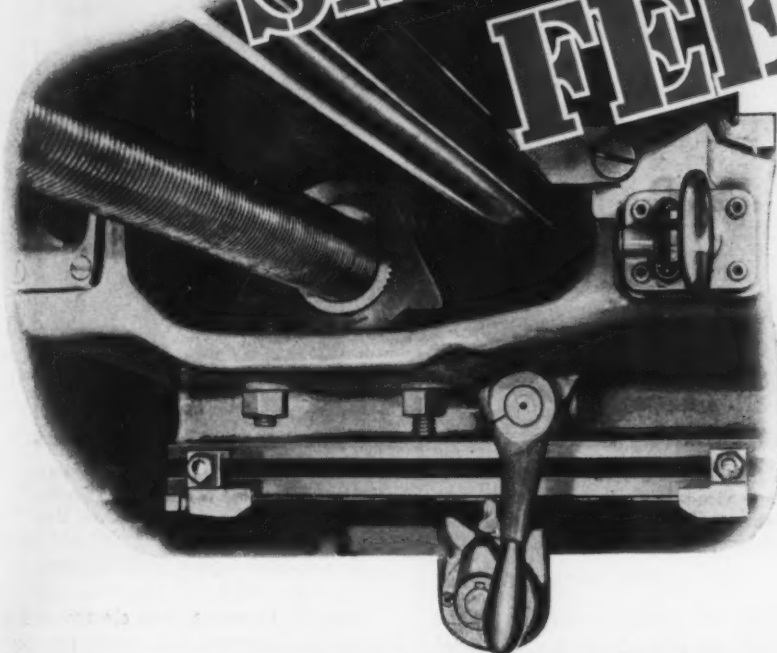


bores the valve guide holes, insert seats and spring seats. The machine is a Transfer-matic—equip-

ped with automatic transfer mechanisms. Work is completed at four cutting stations, and an additional station is provided for loading. Palletized work holding fixtures are provided. Stub tools are used for drilling and forming, eliminating the necessity for tool guide bushings. The coolant is directed through the spindles and tools to the cutting points. The use of Cross subassemblies facilitates maintenance, reduces down time, and provides flexibility for part design changes. *Cross Co.*

For more data insert No. 27 on postcard, p. 37.

SMOOTHER FEED

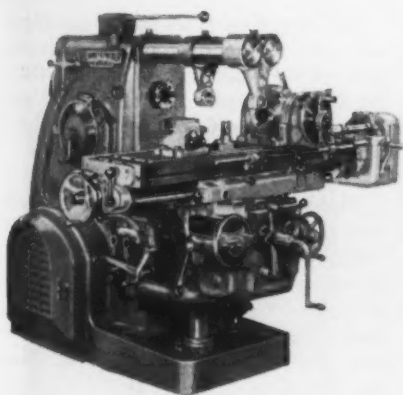


You'll get the smoothest feed performance ever on Kearney & Trecker's new CK milling machines. Why? Because these CK's have a new design, heavy duty, 2" diam. table feed screw rotating through an extra-long table feed nut — giving you more bearing contact. That means Smoother Power Feed and longer screw life. Add the positive-acting backlash eliminator and you get CK's smoother, more effective climb milling. What's more, the separate motor drive for table feed is interlocked with the spindle drive motor for overload protection. No danger of stalling cutters in cut.

A new line of knee-type milling machines

KEARNEY & TRECKER
MILWAUKEE

CK's



15 hp No. 3
Model CK
Universal Style
with 5 to 1 ratio dividing head
and low head attachment

YES, Kearney & Trecker's new CK milling machines are packed with design and operating features that make them *more productive, more profitable for you.*

Spindle-mounted flywheel, broad feed and speed ranges and greater horsepower with separate motor drives for spindle, and feed and rapid traverse, mean you get fullest possible benefit from modern cutting tools.

New CK columns give you greater rigidity. Compared to former columns, they give you 1000 pounds more metal in heavier ribbing, in box-type, sponson construction to absorb the heaviest cutting loads.

For greater production, these machines are equipped with Kearney & Trecker's famous Mono-Level Control that shortens floor-to-floor time, and materially re-

duces operator fatigue. New, non-giare micrometer dials help avoid costly errors in reading . . . give you a positive lock at every setting.

Automatic flood lubrication in column and knee and positive metered lubrication to table and saddle, plus generously proportioned gears and shafts assure you greater machine life.

Find out for yourself about Kearney & Trecker's new CK line of knee type milling machines . . . how they meet every demand of modern milling practice . . . how they can give you greater production at greater profit.

Sizes are No. 2, 3, 4, 5, and 6 . . . Plain and Universal styles. For complete details, contact your nearest representative or write direct. Kearney & Trecker Corp., 6784 W. National Ave., Milwaukee 14, Wisconsin.

REPLACEMENT OF OBSOLETE MACHINE TOOLS
IS AN INVESTMENT THAT MAKES BOTH DOLLARS AND SENSE

KEARNEY & TRECKER
MILWAUKEE
MACHINE TOOLS



Iron Age

Introduces



JAMES M. STAPLETON, was named assistant to vice-president — blast furnaces, Carnegie-Illinois Steel Corp., with headquarters in Pittsburgh.

George O. Keutgen was appointed assistant to Del. S. Harder, vice-president — manufacturing FORD MOTOR CO., Dearborn, succeeding Richard E. Krafve. He has been an analyst for the capital investment department where he worked closely with the manufacturing staff.

Warren Rogers, superintendent of industrial relations at AMERICAN STEEL & WIRE CO.'S Cuyahoga Works, has been named supervisor of benefit administration for the company. **Charles E. Orr**, superintendent of industrial relations at the New Haven, Conn. and Trenton, N. J. works succeeds Mr. Rogers as the Cuyahoga superintendent of industrial relations. **Maxwell C. Krebs**, labor relations supervisor at the Worcester works, replaces Mr. Orr as superintendent of industrial relations at the New Haven and Trenton works.

Lawrence H. Russell was appointed sales manager of the Walker-Turner Div., KEARNEY & TRECKER CORP., with headquarters at Plainfield, N. J.

Allen W. Walz, formerly consultant on industrial relations, will now serve the ARMA CORP., Brooklyn, on a full time basis as industrial relations manager.



GUNNER E. GUNDERSON, formerly vice-president of Brad Foote Gear Works, Chicago, was elected president of the company.

Charles A. Kanter, chairman of the board of the Manufacturers National Bank of Detroit, was elected a member of the board of directors of NATIONAL STEEL CORP., Pittsburgh.

R. J. Vanden Heuvel is the new general sales manager of MILWAUKEE CHAPLET & MFG. CO. Mr. Vanden Heuvel has been with the company for the past 5 years.

John Brod has been appointed manager of the St. Paul warehouse of CAINE STEEL CO., Chicago. **James K. Owen**, formerly with SHARON STEEL for 25 years, will become Indiana and Ohio district manager with headquarters in Indianapolis.

E. V. Crane has returned to the engineering staff of the E. W. BLISS CO. Mr. Crane, formerly with the company for 25 years, will make his headquarters shortly at the new plant in Canton, Ohio.

Harry A. Lageman, formerly manager of the TRAILMOBILE CO. distributor sales in Cincinnati, has been named eastern district sales manager and will be located in New York. **Joseph B. Kleckner** was appointed manager of the factory branch in Long Island City, N. Y.



CHARLES E. SMART, who becomes president of W. & L. E. Gurley, Troy, N. Y., succeeding C. I. Day, who died recently.

Eric G. Peterson was elected to the board of directors and appointed vice-president of the PEABODY ENGINEERING CORP., New York. He will continue as general manager in charge of the New York office and the Stamford plant.

William Fox was named publicity manager of the Detroit Diesel Engine Div. of GENERAL MOTORS CORP. He joined Detroit Diesel in 1942 and has been in the Advertising Dept. since 1947.

Floyd A. Garman moves to his new post as assistant chief engineer of AMERICAN STEEL & WIRE CO., Cleveland, from the position of projects division engineer. **Charles B. Hull**, veteran of 25 years of service with the company's general engineering department, succeeds Mr. Garman as projects division engineer.

T. J. Crocker, assistant manager, has been appointed acting manager of BETHLEHEM COAL MINES during the absence of K. M. Quickel, present manager.

Harold E. Boehm has been promoted to controller of TOWMOTOR CORP., Cleveland. He has been assistant controller since September 1946.

George D. Grogan and Donald Macfarlan, Jr. have been appointed district sales managers in Chicago and Detroit, respectively, for the heavy chemicals department of the PENNSYLVANIA SALT MFG. CO. H. G. Potts, formerly district sales manager in Detroit, has been named supervisor of technical service for the midwest areas. H. A. Smith, formerly district manager in Chicago, has been given special assignments in the heavy chemical field in the Chicago area.

Benjamin Sampson has been made general sales manager of the K. H. HUPPERT CO., Chicago. Mr. Sampson was formerly district sales manager of the Stewart Div. of the SUNBEAM CORP. and recently manager of the Industrial Furnace & Oven Div. of the CLAUD S. GORDON CO.

C. J. Wedlake has resigned as managing editor of *Production Engineering & Management* and has joined the staff of DENHAM & CO., Detroit, as an industrial account executive on public relations and merchandising.

Dr. E. Bruce Ashcraft returns to the WESTINGHOUSE RESEARCH LABORATORIES, Pittsburgh, after a 4-year absence, as advisory engineer for the Chemical Dept. Dr. Ashcraft comes to his present post from the Westinghouse Atomic Power Div. where he was manager of chemistry research. Dr. Donald M. Wroughton succeeds Dr. Ashcraft as manager of chemistry research. Dr. Wroughton who helped refine uranium for the first atomic bomb, was formerly in the research department of the Lamp Div., Bloomfield, N. J.



MARION H. FREEDMAN, appointed division vice-president of the Pacific Northwest Sales Div. of Columbia Steel Co., San Francisco.

Iron Age *Salutes*

WALTER S. TOWER

YOU have seen his name in the paper. Maybe you have heard him speak. But again maybe you don't know who he is. Well, you ought to because he is Mr. Steel Industry. More than any other person has he worked, fought and talked for his industry.

Yet he is a modest man. He will not compromise with principles. And he really does not know how to play politics. He calls them as he sees them and then he proceeds to bombast you with facts—until you are bleary-eyed.

When the steel industry got Walter S. Tower for its executive secretary back in 1933 (he is president of the American Iron & Steel Institute now) they were lucky indeed. But only those in the highest circle of the institute really know this man's iron will. Yes, he has spoken to steel men assembled. He has and can talk on any subject you want to hear. His jokes have been rare and to the point. He has impressed the entire body of the steel people as a man well worth his salt.

But most know all that. What they don't know is that he is, has been, and always will be objective to a fault. He does not give in and he can't even be led to water, let alone drink it—if he thinks it is tainted with misinformation. Maybe part of this taciturn exterior is due to his New England ancestry. Or maybe it is due to his long-ago job of teaching economic geography at the University of Chicago.

Maybe it is because he can see



what we are headed for and he will have none of it. About Walter Tower you cannot say that he has mellowed. Not in the sense he looks at the word. To become mellow to Mr. Tower means that you have given up the fight and have decided to go along. That he can't abide by if he can't see that the facts support such a position.

We salute Mr. Tower because more than any other steel man he has faced barrages of dead cats from congressmen, businessmen and his own people. He calmly says his piece and stands on what he said.

He has steel in his blood; he eats it, dreams it, fights for it and to his dying day will insist that the steel industry knows what it is doing and its critics do not. Walter S. Tower is a credit to the nation's basic industry—steel.



RAYMOND W. AYERS, has been elected vice-president of Frederick Hart & Co., Inc., Poughkeepsie, N. Y.

Louis M. Teich has been elected branch manager of the Philadelphia office and warehouse of the **LATROBE ELECTRIC STEEL CO.** Mr. Teich has been a Philadelphia district salesman for 3 years.

Howard B. Myers, formerly technical director for the Roll Manufacturers Institute, has accepted the position as metallurgical engineer for the **S. H. BELL CO.**, Pittsburgh, where he will be engaged in selling ferroalloys and pig iron produced by the **TENNESSEE PRODUCTS & CHEMICAL CORP.**

H. Waddle, manager of the New Orleans office of **E. C. ATKINS & CO.**, will now take the position of manager of mill supply sales with headquarters in Indianapolis. The New Orleans office will be closed Sept. 29 and activities transferred to Indianapolis.

Burpee M. Franz, superintendent of the cartridge division, becomes assistant works manager of the **WINCHESTER REPEATING ARMS CO.** division of Olin Industries, Inc. **Leonard K. Brown**, assistant cartridge division superintendent, will succeed Mr. Franz as superintendent.

M. E. Douglass, sales engineer of the Scintilla division of **BENDIX AVIATION CORP.**, Sidney, N. Y., has been transferred to Texas to head a newly-created sales territory covering Texas, Oklahoma and Kansas.

John C. Coonley has been appointed manager of **AMERICAN CAR & FOUNDRY CO.'S** Valve Div. He succeeds **W. R. Kottsieper** who is retiring after more than 44 years of service with ACF.

Malvern J. Gross, formerly vice-president of the **GENERAL ELECTRIC X-RAY CORP.** in charge of engineering, has become administrative assistant to Dr. Kenneth H. Kingdon, technical manager of the Knolls Atomic Power Laboratory operated by the **GENERAL ELECTRIC CO.** in Schenectady.

Thomas I. Burbage was elected secretary of the **BLACK & DECKER MFG. CO.**, Towson, Md., succeeding **Harry G. Wheeler**, who died recently. Mr. Burbage joined the company in 1930 and has held positions of increasing responsibility.

Lester E. Reeve has joined **MACK TRUCKS, INC.** as special assistant on financial matters to **E. D. Bransome**, chairman and president.



HARRY L. JENTER, works superintendent of Cuyahoga Works, was appointed chief engineer for **American Steel & Wire Co.**, Cleveland.

Irving L. Arnold, manager of the Cleveland branch office, **CUYAHOGA WRECKING CO.**, for the past 5 years, has been made assistant general manager with the title of vice-president and assistant secretary. **Harry G. Schnell** becomes manager of the Cleveland branch office. **Raymond Berke** is manager of the Detroit branch.

Selden S. Partridge, Jr. was named manager of **SOUTHERN STATES IRON ROOFING CO.'S** plant in New Orleans. He replaces **John P. Starnes**, who was recently promoted to district sales manager in Nashville, Tenn.

Sidney S. Minault has been appointed production manager of **TRACERLAB, INC.**, Boston.

Lemuel B. Hunter has been made industrial relations manager, **INLAND STEEL CO.**, Chicago, succeeding **William G. Caples**, who was elected president of **INLAND STEEL CONTAINER CO.**, an Inland subsidiary. **Carl B. Jacobs**, fleet manager, was named to succeed Mr. Hunter as raw materials manager.

Baird Hodgkinson has been appointed ignition sales engineer at **SIMMONDS AEROCESSORIES INC.**, Tarrytown, N. Y. Mr. Hodgkinson was formerly associated with the A. C. Spark Plug Div., **GENERAL MOTORS CORP.** and **PRATT & WHITNEY AIRCRAFT.**

Russell J. Dickson was made district manager for the Chicago territory of the **A. LESCHEN & SONS ROPE CO.**, St. Louis. Mr. Dickson succeeds **Mark Arnold** who retired July 1 after 47 years with the company.

Charles Plant, Jr., former foundry superintendent, has been made assistant to the president of the **STANDARD ALLOY CO.**, Cleveland. **Joseph L. Lessman** will succeed Mr. Plant as foundry superintendent. **Jack Matz**, formerly in the laboratory, is now in charge of quality control.

Dr. Holger C. Anderson and **Lawrence J. Reader** have joined the staff of the Research Laboratories of **FOOTE MINERAL CO.**, Philadelphia.

R. Graham Holabird was named regional manager of the newly created western region, **NATIONAL ELECTRIC PRODUCTS CORP.**, Pittsburgh.



JOHN R. HARBAUGH, has been named assistant general manager of sales of **Jessop Steel Co.**, Washington, Pa.

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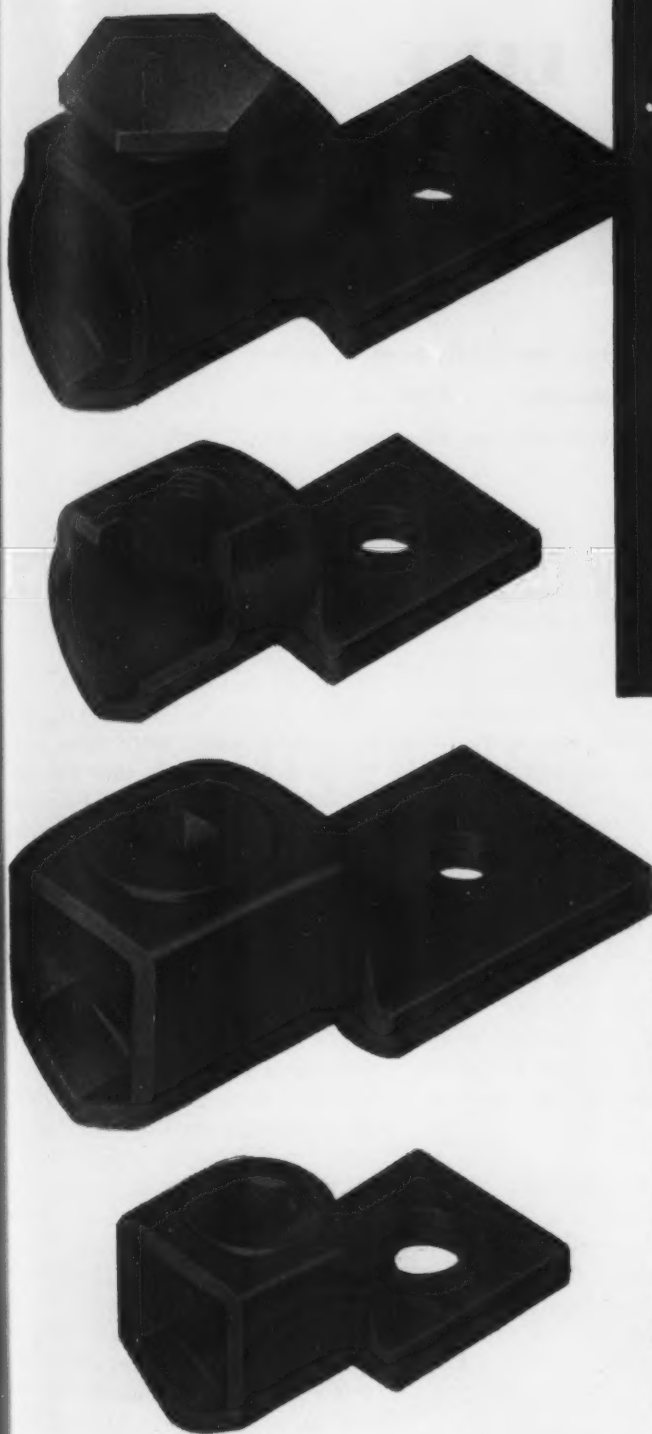
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SHOWN ABOVE are a few of the various styles and sizes of ILSCO Connectors. All are drawn and formed from Revere Seamless Copper Tube. They have 100% electrical conductivity, permitting a more compact unit, with a wide wire range for each size. However, only 6 sizes provide for the entire wire range from # 6 to 600 MCM.

NOTE CUTAWAY VIEW of the connector second from top. See how the one-piece seamless construction permits deep extrusion with a greater number of threads. In spite of their husky construction, these lugs are from 3 to 6 times lighter in weight than cast types of equal carrying capacity.

Overwork makes these lugs Stronger...

... they're fabricated from
Revere Seamless Copper Tube

WHEN IlSCO Copper Tube & Products, Inc., Cincinnati, Ohio, first designed their new type electrical wire connectors, they insisted that the product requirements, which were rigid to begin with, not only be met, but exceeded.

These requirements included mechanical strength, adequate electrical conductivity and uniformity, plus ease of application and long life with no season cracking. So it wasn't easy to find a material that would fill the bill. Because of favorable past experience, IlSCO tried a certain type of Revere Seamless Copper Tube. They gave it the complete cold-working treatment: forming, sawing, drawing, shaping, separating, expanding, tapping, reducing, and piercing. They not only came up with a connector without distortion, but one that, because of its one-piece seamless construction, had the additional strength necessary to withstand Underwriter's Laboratories tests for secureness and the hard usage and abuse the connectors would receive in the field.

The use of Revere Seamless Copper Tube resulted in finished connectors with a smooth, even, bright finish... no pitting... produced connectors that average over 50% cooler in operation than the maximum allowed by Underwriter's Laboratories.

Perhaps Revere can be of help in improving or developing your product... cutting your production costs. Why not tell Revere about your metal problems? Call the Revere Sales Office nearest you today.

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AUTOMOTIVE NEWS AND OPINIONS

Big advance shown in costs of raw materials used by auto-makers . . . Labor costs jump sharply . . . Packard adopts GM wage formula . . . K-F essentially an assembly plant.



By **WALTER G. PATTON**

Prices Parade Upward — The price of rubber has skyrocketed from a low of 15.9 during 1949 to 54.5 on Aug. 27. Other items showing an advance of 20 pct or more as compared with last year's low are copper, iron ore, steel scrap, nickel, tin and cotton. On the same basis, the advance in steel bought from regular mill sources has been moderate, ranging from 10 to 14 pct. However, auto firms are being forced to buy more and more of their steel via the very expensive conversion route.

The accompanying table is indicative of the price jumps for materials since 1941 and during the last 20 months and which directly affect the auto industry's production costs.

Labor Costs Top Prices—While there have been appreciable changes in the cost of materials as noted above, the upward surge of commodity prices is clearly

overshadowed by increasing labor costs, particularly advances occurring during 1950. Pension costs can only be estimated on a very rough basis but since January of this year GM has given its workers a wage package that is conservatively valued at 17¢ per hour.

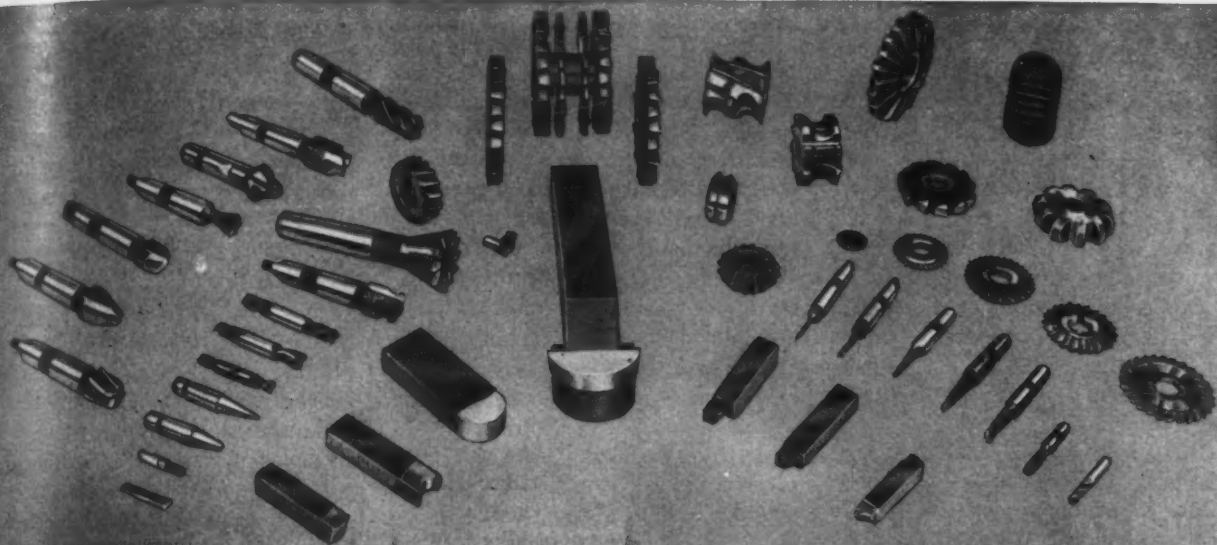
The estimated Chrysler advance, including the latest 10¢ hike, represents an increase in the worker's pay envelope—but not his purchasing power—of 19¢ minimum. (The union is claiming 24¢.) At the time the Ford pension went into effect, it was valued by independent observers at 7-8¢ and at 11¢ by the union.

Briggs Follows Chrysler—This week Briggs and Motor Products joined Chrysler in a pay boost. Meanwhile, the union is pushing Ford to secure a reopening of the contract before the scheduled

date of Jan. 1. Those close to the Ford situation see little, if any chance, for Ford to hold out until the year's end. With the fifth wage round spreading like a prairie fire in Detroit, there were many auto executives who felt that the November elections are all that now stands between the industry and wage and price ceilings.

Why Chrysler Settled—A hot topic for discussion around Detroit is why Chrysler made its surprise wage announcement. While all the facts are not available, some of the contributing factors are reasonably certain: (1) The relatively small advance given by Chrysler early this summer after its grueling strike became out of line with the GM wage scale, after the 5¢ cost-of-living boost came along, (2) There were reports that Chrysler was having difficulty hiring enough men to meet its requirements. (All Detroit plants are having trouble obtaining skilled help at the moment), (3) Sooner or later the Fifth Wage Round demanded by the union was bound to contribute unfavorably to an already deteriorated labor picture at Chrysler. The company, therefore, acted quickly and decisively. Whatever may be the aftermath of the action taken by Chrysler, the company undoubtedly had no choice but to boost its wages—quickly and substantially.

	1941 (July)	1949 Range	1950 (Aug. 27)
Rubber	22.3	15.9 — 19.6	54.5
Steel—Hot			
Rolled bars	2.55	3.85 — 4.25	4.25
Steel—20 gage			
CR sheet	4.05	5.35 — 5.95	5.95
Steel—7 gage			
HR sheet	2.25	3.60 — 4.10	4.10
Coal, steam	—	7.67 — 8.95	8.12
Pig Iron	23.50	46	46
Aluminum, primary	17	17	17.5
Aluminum, secondary	16.3	15 — 24.5	24.62
Copper	12	16 — 23.5	24.5
Iron Ore	4.45	6.45 — 7.45	7.95
Steel scrap	17.85	12.50 — 38	40.50
Nickel	35	40	48
Tin	52	27.5 — 1.03	1.04
Cotton	16.4	30.22 — 34.31	38.97



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Ready for January—It now appears certain that Chrysler-Jefferson tooling is for 80 engines per hour and the prediction that new Chrysler Div. high compression engines will—without war interference—be available in limited quantities by January appears still to be good. The long range Chrysler plan calls for separate production of engines by Dodge and DeSoto.

Dodge, Ford Tooling—Two new tooling programs appear to be just over the horizon. One is a sizable tooling job involved in the new Dodge automatic transmission plant at Indianapolis. The second program is tooling for two new more powerful tractors to be built at Ford's Highland Park plant. Meanwhile, deliveries of machine tools to Ford's Cleveland plant are continuing. There have been some placements on the new Ford V-8 high compression engine. Some interest in new tooling has been reported from K-F.

Duplicates GM Pact—Packard has become the first large automobile firm to duplicate the GM-type 5-year agreement with an escalator clause calling for automatic adjustments of wages with changes in the cost-of-living. Other features of the new agreement are: (1) pensions up to \$125 a month, (2) a 4¢-an-hour annual wage boost similar to the GM annual improvement factors, (3) an expanding insurance program. As a result of the new contract, Packard employees will receive 5¢ an hour more commencing Sept. 1.

Punitive Tactics — A new phrase, "trained wildcats" has been coined to describe work stoppages and slowdowns in plants of auto manufacturers who have not yet given wage increases to their workers.

K-F Assembles—Except for the fact that it makes its own bodies, Kaiser-Frazer is essentially an assembly plant. The company buys a large volume of parts from outside firms. A recent analysis

shows where this money goes. Assuming a 200,000-unit production year, K-F purchases in the Detroit area total \$200 per car, aggregating \$40 million per year. On the same basis, K-F would spend \$36 million in Indiana, \$29 million in Ohio, \$25 million in Pennsylvania and \$15 million in California.

The recent K-F study does not cover non-productive purchases which should be added to determine the total volume bought in a given area. Although not a major producer, K-F stocks nearly 50,000 different manufacturing items. Less than a third of these are components of the finished product. K-F statisticians have figured that more than 47,000 supplier plant employees depend in full or in part upon K-F purchases.

Filters Water from Gas—Water in your gasoline is no longer a problem if you drive a Chrysler, according to Chrysler engineers. If your car is equipped with a new filtering device, it is now pos-

sible to pour a quart of water in the gasoline tank and, according to Chrysler, no harm will result to the fuel system of the car if the water is drained off by removing the plug in the bottom of the tank before refueling.

Friendly Relations—The explanation for Chevrolet's excellent dealer relations is simple: The company really works at the job. In a series of zone meetings just concluded, a total of 19,520 dealers attended. Under the Chevrolet setup dealers are elected to zone councils which in turn select representatives to regional meetings.

At the regional meetings, 16 dealers are elected to attend quarterly meetings at the National Dealer Planning Committee in Detroit. Dealers are selected to zone committees for 1 year but no dealer can serve on a regional or national committee twice in the same year.

THE BULL OF THE WOODS

By J. R. Williams



WEST COAST PROGRESS REPORT

Digest of Far West Industrial Activity—By R. T. REINHARDT



Stockpiling Disagreement—The National Munitions Board and the Western Div. of the American Mining Congress, which held its annual convention and exposition in Salt Lake City last week, found themselves at odds over stockpile buying.

Metal mining men, who before the Korean war were complaining that the stockpile program was lagging, now want the Government to taper off on copper and zinc to relieve the pinch on civilian industries important to defense.

But the Munitions Board, in a message to the convention, made it plain that it intends to accelerate the program as a result of the war.

"Korea," said the message, "underscores the need for accelerated stockpiling so as to be certain we have what we need before we need it."

The Munitions Board also told the mining men that the primary consideration in purchases for the stockpile is national defense not its impact on the industry. It also stated that foreign purchases are made on the same basis, and not to help solve economic problems of foreign countries.

Poor Timing Indicated — That the industry's complaints of leisurely stockpiling before Korea might have had some point was indicated by the board's figures on just where the program stands now. With an all-out war a possibility, the stockpile is less than half the estimated need for an all-

out war economy over a period which it could reasonably be expected to last. The estimated requirement, in terms of money, is \$4 billion. Present value is \$1.5 billion. Another half billion dollars worth is on order. Thus when all outstanding orders are filled, the program will be one-half completed.

Magnesium Revival — Reports that the Army Air Force is renewing interest in the use of magnesium in aircraft focuses attention on producers of this metal during World War II in the west. Magnesium, being approximately one-third lighter than aluminum, was an ideal material for aircraft within its limitation of fabrication and casting. During the last war gun mounts, pilot seats, carburetor and other magnesium small parts were extensively used.

Now Northrop Aircraft Inc., of Hawthorne, Calif. has been commissioned by the Air Force to attempt to develop a practical method of casting entire airplane wings from this metal. The problem is to cast this part of magnesium free of porosity within extremely close limits. If this venture is successful it is anticipated that wings could be produced at higher speed through expanded foundry facilities than could be done in the conventional manner of riveting and welding aluminum. The first "all" magnesium airplane was made by Northrop in 1943 out of magnesium sheets using Heliarc welding.

Reactivation Doubtful—During the last war Permanente Metals Corp. (now Kaiser Aluminum & Chemical Corp.) produced magnesium at its Permanente, Calif. plant by the Carbothermic process, much of which was used for aircraft parts, but with the major production going into incendiary bombs. An experimental foundry there eventually became a production unit.

There would be difficulty in this plant's being reactivated, since part of the facilities have been dismantled and production costs were always well above the national average. At the close of the last war some research was done to halve the production operation but according to last reports the new process had not reached a production stage.

Standby Basis — Near Spokane the government made magnesium during the war by a variation of the Pidgeon process and that plant is still on a standby basis with the Pacific Northwest Alloys producing ferro-chrome and ferro-silicon. Reactivation of this producer is believed feasible and earlier this year Alvin H. Wild, president of American Chrome & Magnesium Industries Corp., of which Pacific Northwest is subsidiary, expressed interest in the possibility of running the magnesium plant there if Bonneville Power Administration should make a firm commitment of 50,000 KVA's of uninterrupted power.

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THE FEDERAL VIEW

THIS WEEK IN WASHINGTON

Renegotiation, Profits Tax Delayed—Two measures affecting industry's purse—a broad renegotiation law and the excess profits tax—appear to be dead issues until Congress meets again next January, or until a special session is called.

Major objections to the renegotiation statute (H.R. 9246) now before Congress are that it would cover contracts let by civilian agencies in addition to military orders and that it does not permit exemptions for farm and mine products, as well oil, gas and timber, as was the case during World War II. Then, too, the Justice Dept. has proposed retroactivity and a 6 pct tax on renegotiated profits, which have stirred a hornet's nest of criticism.

Can Wait Until '51—Adequate legislative authority exists for renegotiation of military contracts, prime and sub, and it is felt that no great harm can come from delaying action on a new law until next year. This authority has been contained in the military appropriations bill for several years and is continued in the current measure.

There is also some feeling on Capitol Hill that in this stage of partial mobilization an all-inclusive renegotiation law would eliminate the need for an excess profits tax. Moves in this direction, however, are not likely to get any place because of the political popularity of an excess profits levy, which would only affect about 20,000 of the nation's 380,000 corporations. The outlook shapes up for enactment of both of these statutes next year, despite the fact that an excess profits tax is administratively unpopular with the Bureau of Internal Revenue.

By EUGENE J. HARDY



Pricing Legislation—There still is reason for businessmen to believe, according to a key member of the Senate, that freight absorption will again be legal soon.

This reassurance comes from Senator Johnson, D., Colo., chairman of the all-important Senate Commerce Committee. Johnson vowed some time ago to "ride herd" on the Federal Trade Commission until that recalcitrant body made up its mind as to when delivered pricing was legal and when not.

"I'm satisfied that Congress is making some progress with the FTC," Johnson told THE IRON AGE last week. "The trouble is, we get one answer from the FTC members, and another answer from the FTC staff."

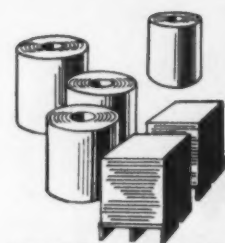
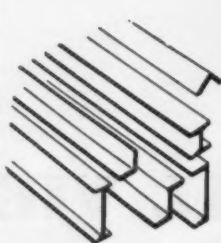
Commissioners Don't Hold Reins—The FTC's two-headed appearance has long been one of the embarrassing political facts of life to the Democratic Party. As far as basic policy is concerned, President Truman is confronted—in the case of this agency—with a bureaucratic situation in which the tail wags the dog. And it is no secret that one reason Mr. Truman finds it so difficult to get competent businessmen to serve on this body is because—let's face it—the Federal Trade Commissioners don't run the Federal Trade Commission.

Senate hearings have brought

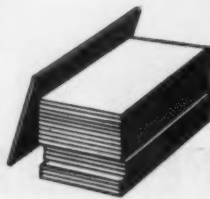
out clearly the fact that the commissioners themselves appear to be in favor of businessmen paying freight bills on the products they ship in order to meet competition. But not so with the FTC staff. The key staff members are apparently forever committed to the school-book theories of the late Professor Fetter of Princeton University—including the doc's pet belief that all industrial pricing should be on an f.o.b. basis.

Science Information O.K'd—Both Houses of Congress have approved legislation (S. 868) which gives the Commerce Dept. the responsibility for disseminating technological, scientific and engineering information to business and industry. Actually, this work has been carried on since the end of World War II by the Office of Technical Services of the Commerce Dept.

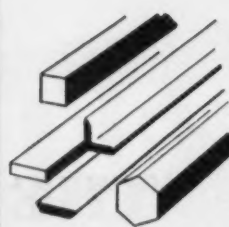
Since it was done under a directive from the Secretary of Commerce, legislative authority was deemed desirable. This bill puts the stamp on Congressional approval on the activity. Perhaps the major function carried on by OTS has been the translating and distributing of captured German technical data. In addition, it also serves as the operating agency for the National Inventor's Council in putting the nation's inventors in touch with the military agencies.

HOT AND COLD ROLLED
SHEETS AND STRIP

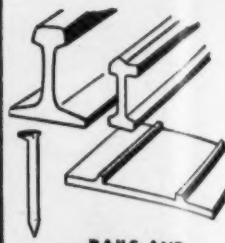
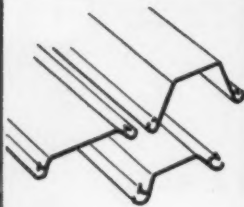
STRUCTURAL SHAPES



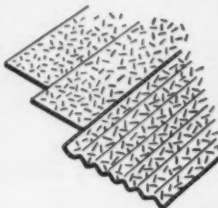
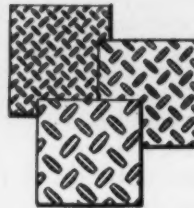
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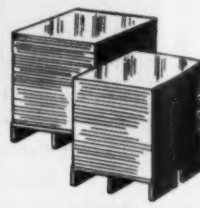
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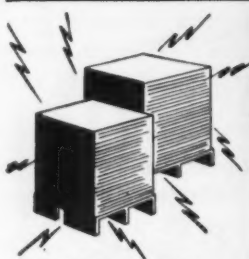
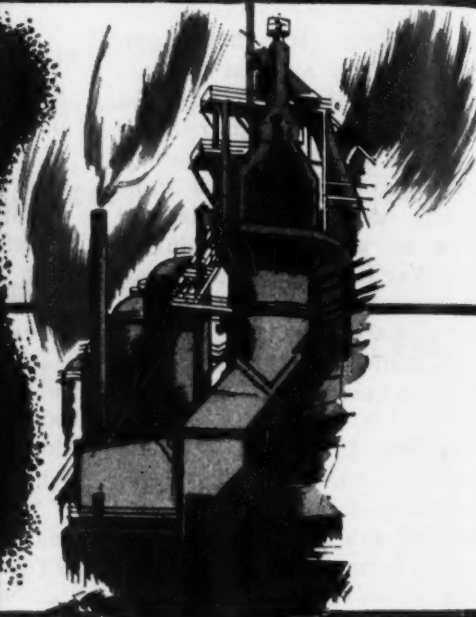
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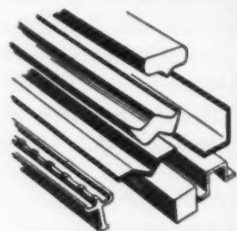
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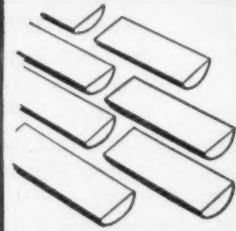
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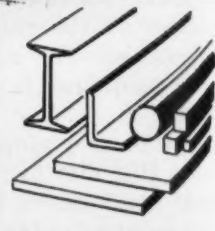
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Forging Economies Through Die Design

PART I



By **LESTER F. SPENCER**
Chief Metallurgist,
Landers, Frary & Clark,
New Britain, Conn.

Economical forging operations depend upon simple, balanced die designs and proper die material selection. This article tells how to simplify die designs in order to achieve balanced-section forgings. These result in low cost forging operations and simplify subsequent finishing and heat treating.

IN the manufacture of component parts, whether it be a forging, casting, or a pressed metal part, simplicity of design is the key-phrase for economics in production. Within the forging industry, simplicity of a designed part is essential to produce items on a competitive basis. In almost every case where there is a conversion from another method of forming, prime consideration is given to design so that a balanced section will result. Not only will the balanced section forging result in minimum cost of the forging sequence proper, but also, it will simplify subsequent operations such as heat treatment. Thus, it was inevitable that a standardization of forging design were compiled. This was done in recent years by the Drop Forging Assn.

This classification includes such standard

shapes as: Discs and crosses; bars with raised bosses; crank shaped items; and shapes forming a Y, double Y, T, H, L and U. All of these shapes are subdivided into a variety of cross sections. However, in some instances, where functional design interferes, forging shapes may be quite intricate and unbalanced. It is with these forgings that a maximum amount of difficulty is experienced resulting in a larger cost factor per unit item.

In the designing of forgings, the fundamental considerations are: (1) Draft angles; (2) fillets; (3) corners; (4) shrinkages; and (5) dimensional tolerances. Draft angles are of importance since the hot plastic metal formed under impact has a certain amount of natural adhesion to the die surface. This prevents ease in removal. Also, even with highly polished dies, the minute cavi-

ties within the die faces will act as binders. The impact will force the plastic metal within the cavities and difficulty in removal will be experienced.

The permissible draft angles will vary considerably depending upon the design of the forging. Thus, in shapes such as a sphere, the forging would provide its own natural draft angle when parted into two equal halves. Shapes such as cones, pyramids, or truncated pyramids and cones have also a natural draft angle when the entire impression is placed into one die. Ordinarily, the normal draft angle employed is approximately 7°. In the event of deep impressions, a draft angle as high as 10° can be employed. This draft angle can either be added to or subtracted from the final dimension of the forging. The practice adopted depends entirely upon the question of interference in the functioning of the specific part. This dimensional change is known and is dependent upon both the size of the draft angle and the length of the draft.

Sharp Corners Are Undesirable

Another consideration in design is the subject of radii and fillets on sharp corners. Sharp corners are considered undesirable in die design since they can be the inception of die cracks that will lead to a decrease in impression life. Also, in subsequent heat treatment operations, sharp corners are undesirable since they lead to incipient cracking within these areas.

Fillets and corner tolerances are dependent upon the size of the forging and apply to all meeting surfaces even though they may not be specified on a drawing. Fillet tolerances usually apply to inside corners and edges in all cases where surfaces meet at an angle less than 180°. Corner tolerances usually apply to outside corners and edges where the surfaces meet at an angle greater than 180°. The accepted fillet and corner tolerances are shown in Table I.

TABLE I
ACCEPTABLE FILLET TOLERANCES

Net Weight in Lb.	Tolerance in Inches
0.3	3/64
1.0	1/16
3.0	3/64
10.0	1/32
30.0	3/64
100.0	1/8

Shrinkage is also a factor of importance in the production of forgings. This shrinkage factor will vary considerably. Its variance is

dependent upon forging design, method employed in forging, material forged, forging finishing temperatures, skill of operating personnel, and precautions taken in both heating and forging phases. Die impressions intended for the forming of steel are usually made with shrink allowances of 3/16 in. per ft.

Of interest is the work of Mueller who worked on the shrinkage factor as it was related to thermal conditions in the forging of a connecting rod. The conditions of forging along with the dimensional check obtained are as follows: Rod 1 was forged from a bar which was decidedly on the high side of the recommended forging temperature. Rod 2 was forged from a bar which was considered normal temperature and representative of an approved practice. Rod 3 was forged from a bar which appeared on the lower side of the forging range, but still hot enough to forge satisfactorily. Rod 4 was selected because it was a sticker, and was hammered several additional blows before it was released from the impression. Rod 5 was forged definitely on the cold side of the forging temperature. The results of the shrinkage factor tests are shown in Table II.

TABLE II
DIMENSIONAL RESULTS

	Rod 1 Hot	Rod 2 Regular	Rod 3 Cool	Rod 4 Sticker	Rod 5 Cold
Length A	9.000	9.000	9.080	9.110	9.110
Length B	7.850	7.870	7.920	7.940	7.940

The variance in length was considerable. Length A, an overall measurement, had a variance of nearly 1/8 in. Length B, a distance from the end of the pin boss to the radius of the crank boss, exhibited a similar variation.

Once a specific design is accepted, it is necessary to establish tolerances to serve as a guide for dimensional acceptability limits. The standard tolerances as established by the Drop Forging Assn., Table III, are utilized where the weight of the individual forging is up to 100 lb. These standards include dimensional tolerances, allowable shrinkage plus die wear, mismatching tolerances, draft angle tolerances, quantity tolerances, and fillet and corner tolerances.

Where machining operations are included on certain parts of a specific forging, sufficient stock allowances are made so that the machined forging will meet dimensional specifications. In the event that surface decarburization is of importance, such as is the case with many of the automotive and aircraft applications, allowance for removal of the decarburized skin must be made. The amount allowable is usually 1/16 in. However, it may be less depending upon both

TABLE III

STANDARD TOLERANCES FOR FORGINGS UP TO 100 LB

Condensed from Drop Forging Assn. Standards

Shrinkage and Die Wear in Inches*						Thickness Tolerances in Inches*						Fillet and Corner Tolerances*			Draft Angle Tolerances in Degrees*						
Length or Width	Shrinkage		Max. Net Weight	Die Wear		Max. Net Weight	Commercial		Close		Max. Net Weight	Commercial	Close	Drop Forgings		Upset Forgings		Nominal angle	Commercial limits	Close limits	
	Commercial + or -	Close + or -		Commercial + or -	Close + or -		Minus	Plus	Minus	Plus				Out-side	Inside Holes	Out-side	Inside Holes				
1 in.	0.003	0.002	1 lb.	0.032	0.018	0.2	0.008	0.024	0.004	0.012	0.3 lb.	3/32	3/64								
2 in.	0.006	0.003	3 lb.	0.036	0.018	0.4	0.009	0.027	0.005	0.015	1 lb.	1/8	1/16								
3 in.	0.009	0.005	5 lb.	0.038	0.019	0.6	0.010	0.030	0.005	0.015	3 lb.	3/32	5/64								
4 in.	0.012	0.006	7 lb.	0.041	0.021	0.8	0.011	0.033	0.003	0.018	10 lb.	1/4	3/32								
5 in.	0.015	0.008	9 lb.	0.044	0.022	1	0.012	0.036	0.003	0.018	30 lb.	7/32	7/16								
6 in.	0.018	0.009	11 lb.	0.047	0.024	2	0.015	0.045	0.008	0.024	100 lb.	1/2	1/2								
For each additional inch add 0.003 0.0015						3	0.017	0.051	0.009	0.027	* FILLET AND CORNER TOLERANCES apply to all intersecting surfaces even though drawings or models indicate sharp corners. If such drawings or models have or indicate fillet or corner dimensions of larger radii than the following standards, such larger dimensions shall be considered as actually specified and the tolerances shall be "special tolerances".			7		7 or 10	3	5			
For example:						4	0.018	0.054	0.009	0.027	Where a corner tolerance applies on the meeting of two drafted surfaces, the tolerance shall apply to the narrow end of such meeting and the radius will increase toward the wide end. The total increase in the radius will equal the length of the drafted surface in inches, multiplied by the tangent of the nominal draft angle.			0 to 10		0 to 13	0 to 5	0 to 8	0 to 7		
7 in. 0.021 0.011 13 lb. 0.050 0.026						5	0.019	0.057	0.010	0.030	* THICKNESS TOLERANCES for drop hammer forgings apply to the overall thickness measured in a direction perpendicular to the fundamental parting plane of the dies. For upset forgings, thickness tolerances apply to the metal actually enclosed and formed by the dies, measured parallel to the direction of travel of the ram.			0 to 8		0 to 8	0 to 4	0 to 7			
12 in. 0.036 0.018 21 lb. 0.062 0.031						10	0.022	0.066	0.011	0.033											
16 in. 0.044 0.027 31 lb. 0.077 0.039						20	0.026	0.078	0.013	0.039											
24 in. 0.072 0.036 41 lb. 0.092 0.046						30	0.030	0.090	0.015	0.045											
36 in. 0.106 0.054 51 lb. 0.107 0.054						40	0.034	0.102	0.017	0.051											
48 in. 0.144 0.072 71 lb. 0.137 0.068						50	0.038	0.114	0.019	0.057											
60 in. 0.180 0.090 91 lb. 0.167 0.084						60	0.042	0.126	0.021	0.063											
						70	0.046	0.138	0.023	0.069											
						80	0.050	0.150	0.025	0.075											
						90	0.054	0.162	0.027	0.081											
						100	0.058	0.174	0.029	0.087											
																					</

the material forged and the forging practice.

The basic characteristic of a forging is the uninterrupted grain flow that is developed during a forging sequence. This is developed through plastic flow as initiated by impact and is a favorable factor in obtaining uniformly high strength characteristics. This is true in many instances. However, dependent upon the design, directional properties may also be introduced that may make a forging undesirable. A typical example is where tri-axial stress concentrations are experienced on unit designs during the service life. Where uninterrupted flow lines are of an advantage, it is imperative to design

the die so that this factor may be realized. Once the metal flow stops, it quickly sets and is difficult to start. This results in underfills, cold shuts, oversized forgings, die sticking and excessive die wear.

The dies that are employed in the forging operation are generally classified as either open or closed. The open die is a plane surface die where various component parts of an individual forging are worked. The closed die contains recessed impressions where all surfaces of the material forged are worked simultaneously. The closed die is the more frequently employed in the production of small to medium weight forgings.

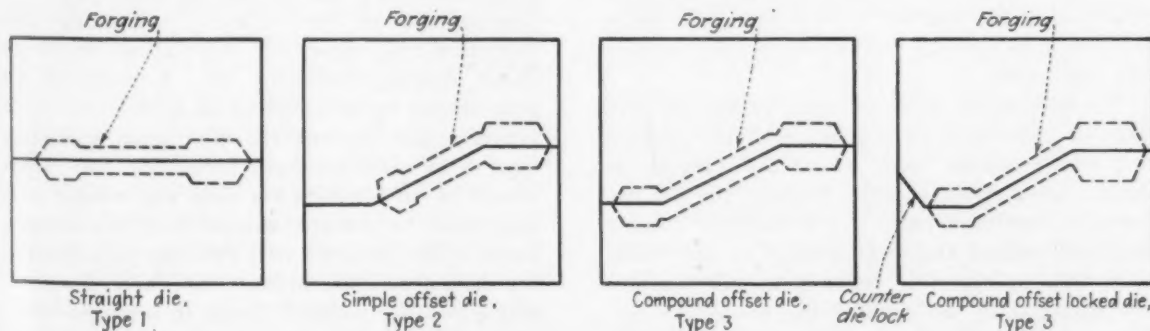


FIG. 1—The three main types of closed drop hammer dies are the straight die, type 1, the simple offset die, type 2, and the compound offset die, type 3. Courtesy, Chambersburg Engineering Co.

The two portions of the die must match so that an accurate forging will result. The point of contact between the two halves of the die is known as the parting line.

The three basic designs used in a closed die, Fig. 1, are: The straight die; the simple offset die; and the compound offset die. The straight die, type 1, has the most desirable parting line arrangement since no end thrust is exerted on the dies and, as a consequence, there is a minimum wear factor. The simple offset die, type 2, consists of a parting line with only one change of plane. It can be seen that the end thrust will vary with the angle formed by the two planes. The end thrust being small when the angle formed by the two planes is large and the end thrust being large when the angle between the two planes is small.

A counterlock die is required to compensate for end thrust, the size of the counterlock die being proportionate to the amount of end thrust. A compound offset die, type 3, has more than one change of plane. These dies can often be arranged so that they balance the thrust exerted by the change of plane. However, counterlock dies are usually necessary. An example of a locked die where the counter die lock balances the end thrust from the inclined plane of forging is also illustrated in Fig. 1.

Parts Have Multiple Impressions

In the forging of small component parts, such as is experienced in the forming of pliers and parachute hardware, dies are designed with multiple impressions so that several pieces can be produced with one flashing. This method is justified only where there is a considerable run to offset the added expense in preparing a multiple die impression. Good balance between impressions properly distributes the stack during a forging sequence and avoids die shifts, excessive wear on hammer dies, and underfills. In the design of grouping dies it is necessary to consider spacing of impressions. If the spacing is too small, the flash edge of the die will wear readily. If the spacing is too wide, too much stock will be taken up in flash waste and underfills may result.

The component parts of a die impression will vary in accordance to the design of the forging and the material from which the forging is made. On a standard type forging, the die impressions would include: (1) A fuller or swager that will reduce the section sides of the material; (2) an edger or roller that will conform the material to the area of the respective sections of the piece to be forged; (3) a blocker that will give a general shape to the forging; and (4) a finishing impression that will separate

the forging from the bar to which it is attached.

In addition to the impressions, the dies are provided with gutters. Gutters are that portion of the die around the impressions. They serve to relieve excessive pressures and provide space for excess stock or flash.

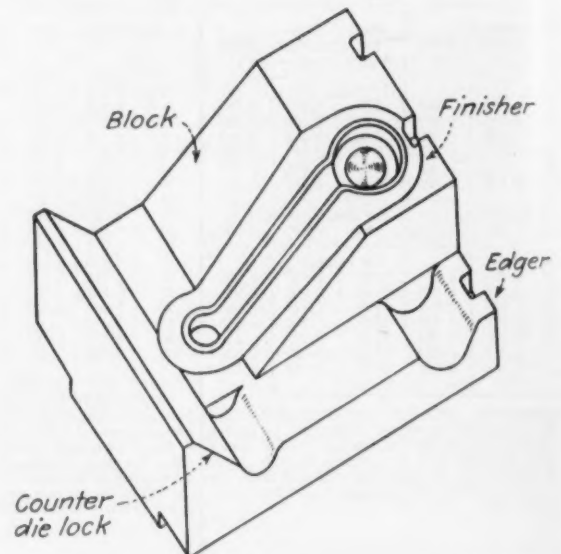


FIG. 2—The three basic die components, the blocker, the edger, and the finisher, appear in this one die block. Courtesy, Chambersburg Engineering Co.

Fig. 2 shows an arrangement of three basic die components in one die block, namely, the blocker, the finisher and the edger. Because of the location of the parting line, considerable end thrust would be exerted during the forging operation that would cause the dies to be pushed apart. Therefore, it is necessary to counteract this effect by including a counter die lock.

In upset forging practice, a great majority of shapes that are formed are symmetrical. However, it is possible to form non-symmetrical shapes as well. In the matter of draft angles, upset forgings do not require much if any draft. This fact often realizes a savings in both material and machining time. The tolerances employed in upset forging are similar to those used in drop forging practice.

In a discussion of modern upset forging machine, Criley has stated the following: (1) The upset forger should have a rigid frame with minimum transverse and longitudinal distortion under forging pressures. (2) A powerful die grip should be provided so as to hold the stock securely and prevent the dies from spreading open with resultant flash formation. (3) There should be an accurate die slide and header slide alignment to prevent mismatch of the impressions of the two dies with heading tools producing deep concentric holes. (4) There should be ample heading power to forge to accurate thickness and drive the stock to the remote parts of the die impression and properly fill them. (5) A fast starting clutch is necessary in conjunction

with operating conveniences so that multiple operations as required to produce difficult forgings can be performed before working stock loses its forging heat.

One advantage of upset forging in regard to die construction is that because of the absence of impact it is possible to build dies of inserts. Thus, without prohibitive costs, it is possible to utilize a variety of high grade tool steels to exactly meet the needs at different locations of an impression. This gives increased durability and makes the more vulnerable parts inexpensively renewable. Illustrated in Fig. 3 are upset forging die components including the two gripper dies and heading tools. The forging sequence is also illustrated.

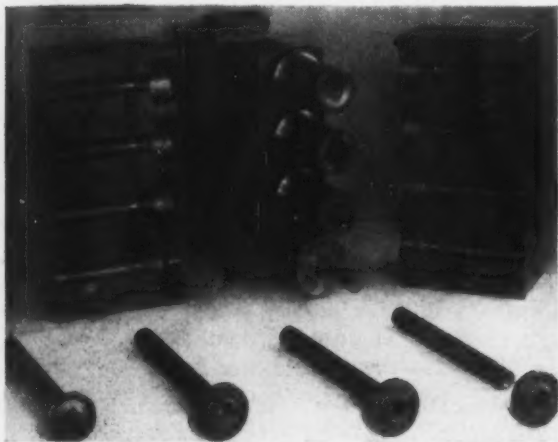


FIG. 3—Small clutch hubs are produced with these forging dies and tools. Courtesy, Ajax Mfg. Co.

Press forgings are finding wide applications in the forming of large steel forgings and in the shaping of nonferrous materials such as brass and bronze. Die design practices are very similar to that practiced in drop forgings, the shapes being made as symmetrical as possible. In the forming of nonferrous materials, draft angles can be somewhat smaller than the usual 2° to 3° used for a similar drop forging. Press forging dies are, by comparison, economical to make since they do not need a large die block capable of absorbing the impact of the steam or drop board hammer. Consequently, the dies can be built with comparatively small inserts made from the best grades of tool steels. This is similar to that experienced in die construction of upset forging practice.

Auxiliary die equipment would include those items that are utilized in either hot or cold trimming, punching, coining, and sizing. The trimming operations, the function of which is the removal of flash, can be performed hot directly after the finishing impression has been made, or it can be performed cold. The time of trimming is unimportant in this event. Since hot trimming dies must be ready at approximately the same time as the forging dies, it is

customary to make a finished impression of the forging in lead. This model is then used to obtain proper trimming dies.

In cold trimming, the dies necessary for this operation can be made even after the forging dies are in operation. In this event a completed forging will serve as the model. There are two essential components in a set of trimmer dies: (1) The punch, and (2) the blade or die. The trimmer punch is machined to have a good bearing on the forging so that it can push it through the trimmer blade. The trimmer blade conforms to the outline of the forging at the parting line. The trimmer die shoe employed should be of universal design to expedite setup and to reduce die costs. The trimmer blade may be either in one solid piece that is fitted in the trimmer shoe, or it may be in a number of sections that are closely fitted together and securely fastened.

Trimmer Blade Has Locating Edge

In hot trimming, the top of the trimmer blade is often provided with a flat next to the cutting edge. This serves to locate the forging for trimming and to provide sufficient stock for subsequent grinding when the cutting edges get dull. The inside of the trimmer blade is backed off at an angle that varies from 3° to 5° and extends from the cutting edge down to the base of the trimmer blade.

Punch and trimmer die clearances are determined by individual practices. Factors involved are the shape and size of the specific forging, the forging draft, flash thickness, and the forging material. The standard flash allowance in hot trimming is usually $1/32$ in. for each die, or a total of $1/16$ in. flash thickness. Where forgings of considerable size are encountered, trimmer dies are ground so that the shear action is not on all parts of the flash at the same time. Shearing action must be controllable otherwise distortion of the forging may result.

Cold trimming will follow approximately the same conditions as stated above. However, punch travel may extend more into the die, especially where little or no angular clearance in the blade is provided. Standard flash allowances are held more rigidly so that a 0.020 in. flash is allowed for each die making a total of 0.040 in. total flash. Of common occurrence is the appearance of minute cracks at the flash line. The cause of these can be easily corrected by keeping the blades sharp and maintaining the proper clearance between punch and trim blades.

Punching holes within a forging may be done in a separate operation. However, in some instances it is incorporated into the trimming operation. Punching differs from trimming in that the forging usually remains stationary on the bottom die, and the punch pushes out the slug. As in trimming, the shearing action in punching can be performed either hot or cold.

Aluminum Core Boxes

BETTER AND CHEAPER



Accurate aluminum core boxes can now be produced at lower cost than those made of wood. By this new method, foundries can greatly reduce overall coremaking costs, storage and handling. Highly skilled patternmakers are not required.

By **FRANZ SCHUMACHER**, Chief Patternmaker,
Cooper Alloy Foundry Co., Hillside, N. J.

THE need for better core producing equipment has long been recognized by foundry executives. But the excessive costs involved in the production of metal dryers, blow boxes and core boxes, particularly core boxes for larger cores, has seriously limited advancement. It is good news to the foundry trade to learn that a method which permits the production of metal core boxes for even less money than they would cost in wood has been perfected.

At the heart of producing good core box equipment is the production of the master shell pattern. This is an art which requires special skill and years of experience. Patternmakers often guard their secrets for producing these shell patterns, with the result that there are almost as many types of core box equipment as there are master patternmakers. Unfortunately, previous attempts at reducing costs were always coupled with an inferior product, so that old-fashioned methods have continued. Shell patterns of uniform thickness cannot be produced in wood.

A survey of foundries will show that much metal core box equipment is relatively heavy, expensive to produce and, in addition, the wall thickness is generally uneven; this means uneven core bake and consequently higher cost. To avoid the higher cost of metal equipment, some foundries use dryers made out of core sand produced in their own core rooms. Many other methods are known for producing dryers and core boxes, but most of them are inaccurate and expensive.

ADVANTAGES OF ALUMINUM CORE BOXES

- | | |
|-------------------------------|------------------------------------|
| 1. Accuracy of dimensions. | 7. Easier to handle and store. |
| 2. No warping. | 8. Uniformity of cross-section. |
| 3. No shrinking. | 9. Minimized foundry handling. |
| 4. Suitable for use as dryer. | 10. More economical in first cost. |
| 5. Light in weight. | |
| 6. Durability and long life. | |

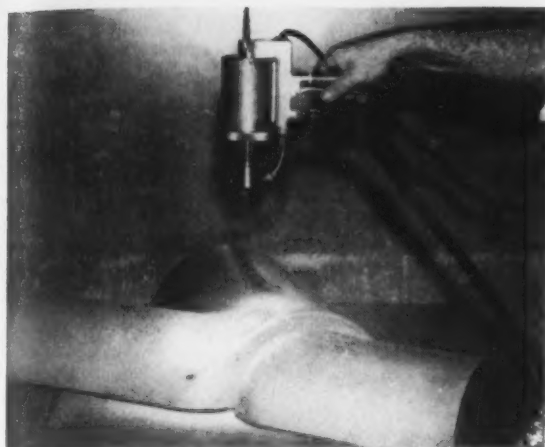
Larger core boxes are frequently made out of wood, pieced together like a jig saw puzzle with an almost endless number of parts, and heavily reinforced to stand the strain and punishment received in the core room. Costly brass facings are often used to increase the life of wooden boxes, but these do not stop the shrink, warp and wear on the wood. Aluminum is recognized as ideal for these large core boxes, but the difficulty of making the master shell pattern has restricted its use. To make such a shell pattern out of wood and maintain an even $\frac{3}{8}$ -in. wall thickness, particularly where curved sections are involved, is almost an impossibility.

Ignoring all previous attempts to make metal core boxes and dryers economically, the staff at Cooper Alloy Foundry Co. has worked out a method (patent applied for) for producing sound master shell patterns of even wall thickness. These are produced with a minimum of equipment, time and labor. And these uniform shell patterns permit the production of large aluminum core boxes for less money than they can possibly be produced in wood.

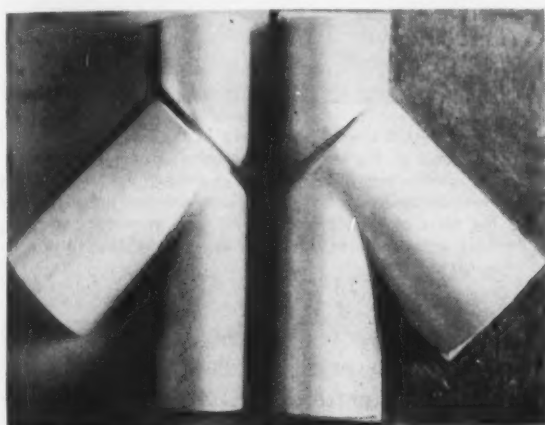
Basic to the method developed is the use of a spray gun designed for the spraying of low temperature lead-base alloys. Since a suitable gun was not found on the market, the company developed one of original design and is currently manufacturing it on a production basis.

The procedure for producing metal core boxes in accordance with the newly developed methods is as follows:

- (1) Make core plug and mount on plywood board.
- (2) Brush graphite on plug and board to act as separator for small shell patterns.
- (3) Spray low melting alloy (approx $\frac{3}{16}$ in. thick).
- (4) Add ribs for reinforcement and bosses for dowels and blow holes.



SPRAYING low temperature alloy on a core plug for a 10-in. Y-valve. The core plug is mounted on a plywood board.

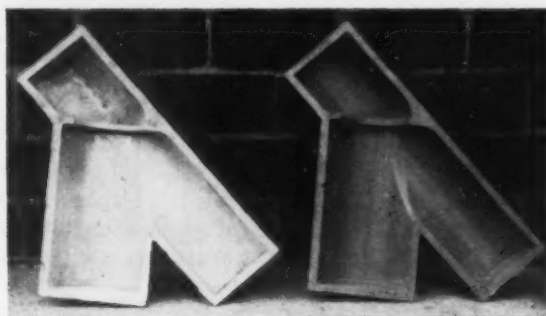


SPRAYED SHELL PATTERN, left, for a 10-in. Y-valve. Shell pattern shown at the right has been sprayed and then built up with cheesecloth and plaster-dipped burlap.



BACK SIDE of completed shell pattern, with reinforcing ribs serving as feet.

For larger core boxes, the low melting alloy is applied in a thin coat, approximately 1/64 in. in thickness. Cheesecloth is then cut to fit the surface of the core plug, and brushed on the core plug with shellac. This binds the cheesecloth with the metal spray. To further increase the thickness, burlap is tailored to fit the sur-



COMPLETED aluminum core box, left, and the shell pattern. Wall thickness of this 10-in. Y-valve core box ranges from 5/16 to 3/8 in. Box weighs only 23 lb and was produced within 7 hr, as compared to 75 lb for an equivalent wooden core box requiring at least 20 hr.



SMALL SHELL PATTERN built up by metal spray. Ribs have been added to serve as reinforcement and feet, and plaster of paris was brushed on for additional backing.



ALUMINUM CORE BOX made from a small shell pattern.

face, dipped in a pail of plaster of paris and added to the thin shell. From two to three coats of this plaster-dipped burlap will produce a thickness of approximately 3/8 in. Ribs for reinforcement or to supplement the feet of the core box can then be added to finish the shell pattern.

Although the shell pattern has sufficient strength to be molded, it is recommended that the core plug be used as a ramup block to preserve the pattern. The alloy used for spraying may be any of the low melting alloys on the market. Cerro Safe, which melts at 255°F, was found to be the most suitable for this application.

The purpose of the metal spray is to obtain accurate dimensions on the part of the core box where dimensions are curved, sharp corners, and a smooth, true surface.

Electronic Welder Speeds Strip Pickling

THE time limitations imposed upon flash welders in joining coils of sheet stock in high speed strip pickling lines at Westinghouse's East Pittsburgh plant has necessitated a complete redesign of the welders to provide fast operation. On a pickling line installed during the past year it was necessary to make a weld every $1\frac{1}{2}$ to 2 min with the line running at its rated speed. It can be readily seen that the saving of a few cycles in the total operating time of the welder becomes an appreciable saving in operating time in the course of a day.

One step in the redesign of the welder was to change practically all of the mechanical operations of the welder from electro-mechanical to hydraulic.

In order to further increase the speed of the welder, it was considered undesirable to use the conventional magnetic contactor to energize the welding transformer. Obviously, a contactor capable of handling the 1200 amp required would be physically large and consequently slow in operation. Furthermore, with such frequent operation, the maintenance required would be quite high. It was, therefore, decided to use Ignitron contactors for this application.

These electronic contactors are used in a back-to-back arrangement so that each tube conducts during an alternate half cycle. This supplies

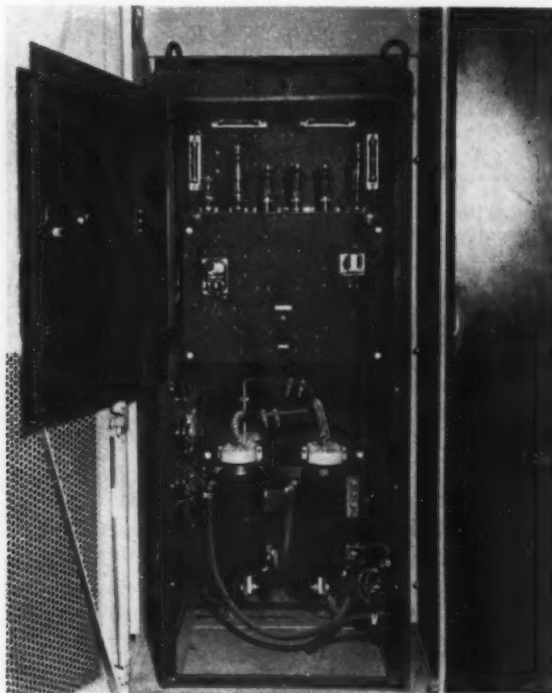


FIG. 1—Continuous power is supplied to the weld by this electronic flash welder. Components are the Ignitron contactors, the synchronous timer, and the firing control.

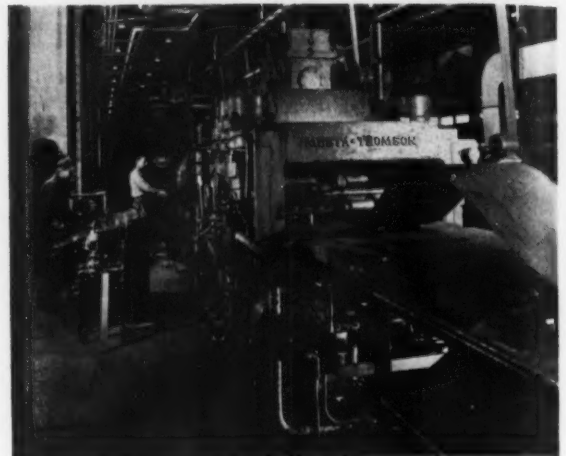


FIG. 2—In the welding of strip in the flash welder, the head of the welder, foreground, moves toward the stationary head as the welding progresses. This necessitates having a loop in the strip at the start of the operation. At left, operator controls entry end of the line as well as the flash welder.

continuous power to the weld. These tubes complete with their control are shown in Fig. 1.

The use of Ignitron contactors makes it possible to regulate the power by means of "heat" control so that the welding current is accurately adjusted throughout the welding cycle. This results in a uniform heat being obtained. In addition, it is possible to accurately control the duration of the cycle by the use of a synchronous timer. In this way, each welding cycle can be initiated, the current regulated, and the length of the cycle controlled so that successive welding cycles accurately duplicate each other. Consequently, when an optimum cycle has been established for any material, it can be consistently repeated. As no mechanical parts are required in the controls, there is no problem of mechanical inertia. This results in much faster operation being obtained and further decreases the overall time required for making a weld.

As a result of having accurate duplication of successive welds, the weld breakage during cold rolling in the tandem mill has been reduced to less than 4 pct. Because of this, the rolling practice has been revised so that the tandem mill is no longer reduced in speed while the weld is rolled. This, in turn, results in the gage of the finished strip being more closely maintained because the tension does not vary due to repeated retardation and acceleration of the mill for each weld.

Fig. 2 shows this welder in operation. The welding power is supplied by a 667 kva welding transformer which is energized by the contactors.

STEEL PARTITIONS Gain Acceptance



By **C. J. NOCAR**
Product Development Engineer,
E. F. Hauserman Co.,
Cleveland

Wider use of movable steel partitions has been one factor in the increased demand for cold-rolled sheets. These units are only a fourth as heavy as masonry construction. They are mobile and fireproof. Their appearance is functional, and the maintenance of the sections is low.

DEMAND for cold-rolled sheet steel has been increasing. This is due in part to the growing use of movable steel partitions, wainscoting, and steel doors in office buildings, factories, laboratories and schools. Partitions are made to relatively close specifications and are coated with hard baked finishes. With proper maintenance, they will last the lifetime of the building. Production of them is a precise operation at the E. F. Hauserman Co.

Hauserman engineers have found that cold-rolled sheet and coil stock, predominantly 20 gage, give the best results. These sheet steel products are manufactured in standard shapes and sizes for customary needs. However, on occasions they are tailor made to architectural specifications. Under such circumstances, as in the new Mutual Life of New York building, the planning, designing and layout of the steel interiors were worked out along with the drawing of plans and specifications.

Steel Units Are Lightweight

These movable partitions, wainscotings, and doors are in increasing demand for the remodeling of old buildings. In the Missouri Pacific Hospital in St. Louis they have been the one factor that has saved the buildings from obsolescence. Because the steel products are one-fourth as heavy as masonry construction, owners of these buildings were able to remodel the interiors in the old structure.

Major factors in the acceptance of steel partitions, wainscoting, and doors are: (1) Their mobility—building interiors can be remodeled to suit changing needs almost overnight; (2) their extremely low maintenance cost; and (3) their attractive, modern, functional appearance.

Shearing to size is usually the first operation in the manufacture of sheet metal panels. Standard mill sizes are sheared to tolerances of 1/128 in.

Side gages are permanently connected to the machine and squared with the shear blade. Electrically operated back gages and manual front gages are used for shearing wide sheets. In shearing large sheets it is necessary to use front gages to properly support the sheet during a shearing operation. On narrow strips, the back gage is used, dropping the finished sheets off the back of the shear to the load. All machines are equipped with hydraulic hold-downs and electrical back gages.

After shearing, the steel goes to the layout department. On standard items, standard templates are used to locate all notchings, punchings, etc. These are taken from the storeroom by the layout man, checked against the latest blueprint and placed with the load of sheared steel. This is spot-checked to see that it has been sheared to tolerance.

This material then moves to the punch press where all notches, holes, and cutouts are made before going to the brakes. The punch presses

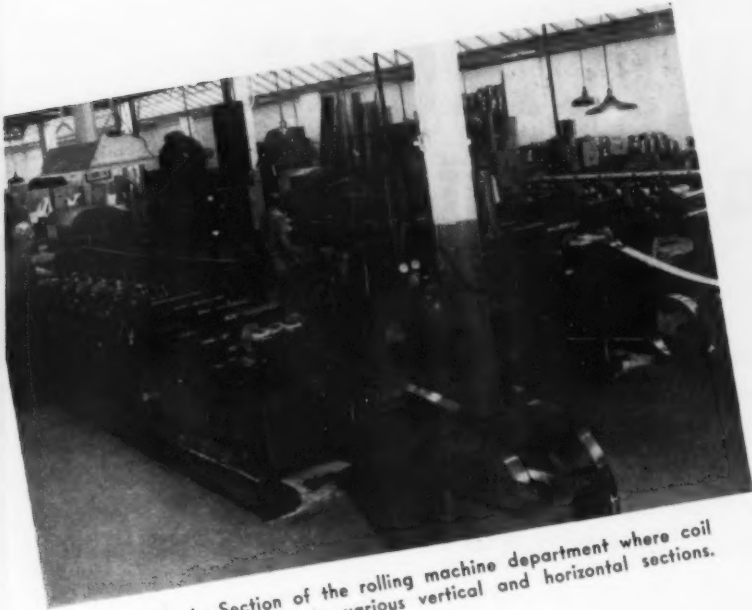


FIG. 1—Section of the rolling machine department where coil steel is formed into various vertical and horizontal sections.



FIG. 2—Ribs and panel plates are secured to flat steel sheets in this automatic multiple spot welder.



FIG. 3—Hauserman stores standard parts and sub-assemblies in wide aisle stockroom for future use.



FIG. 4—Prime coats are applied to partially assembled components in this spray booth.



FIG. 5—Prime painted steel partitions are baked at 325°F in this baking oven.



FIG. 6—Panels and rock wool insulation are assembled in the panel assembly department.

FIG. 7—Hauserman built partitions are assembled by the company field force.



used are from 10 to 125 tons. Approximately 1200 punch press dies are kept in the tool crib.

After punching, the material progresses to the brakes where the various forms are put on. There are approximately 800 brake dies in stock. These vary from simple blade dies, through off-sets and goosenecks, to complicated cam dies for forming edges on panels. The brakes vary from 100 to 550 tons. This high tonnage is required to produce the square corners not normally found in sheet steel fabrication.

Close Tolerances Are Achieved

The rolling machines, on which coil steel is formed into the various vertical and horizontal sections, permit the holding of closer tolerances and higher rates of production than would be possible in any other manner, Fig. 1.

A multiple-spot welder, Fig. 2, applies box section ribs to panel plates. This unit was developed by Hauserman engineers in cooperation with the welder manufacturer. It was designed for flexibility of operation and uniformity of welds.

Steel panel plates are made flat within a tolerance of 1/16 in. by stretcher leveling. Reinforcement with 24-gage cold-rolled steel box ribs on 12-in. centers assures a permanently flat surface. Straight, true, accurate joints can be guaranteed to be not more than 1/64 in. out of plane.

Among the various operations performed in the assembly department are spot and butt welding, arc and gas welding, drilling, tapping, and metal finishing. After these operations, the various parts and subassemblies are stored pending their use in individual contracts, Fig. 3.

The parts required for a contract are gathered together and hung on conveyers. These progress through: (1) The degreaser for cleaning; (2) the spray booths, Fig. 4, where they receive a prime coat; and (3) the baking ovens, Fig. 5, where they are subjected to a temperature of 325°F for 30 min.

The parts then go to the panel assembly department where they are put together into large units. At this station the rock wool is installed, Fig. 6.

In the painting operation, an alkyd resin base paint is used. The plain colors are sprayed on hot and have enough opacity to cover the prime coat when applied at a film thickness of two mills or better. The enamel has a low gloss, with a non-polishing surface and high mar-resistance.

A nationwide field force installs everything produced at the Hauserman plants, Fig. 7. Through all phases of manufacture, from the raw material through erection of the finished product, quality control inspectors continually check every operation to see that standards are maintained.

The light weight of the partitions is used to advantage in the structural design of new buildings. Three inches thick and packed with rock wool, the partitions weigh only 8 lb per sq ft of wall area. This compares with 30 lb per sq ft for 4½-in. tile and plaster walls. This saving in weight can mean a reduction in the size of structural members, but it generally is applied to give an added margin of safety.

Steel Walls Are Fire Resistant

Steel walls without insulation are slightly more soundproof than 4½-in. tile and plaster walls. Insulated walls with packed posts, base and cornice have an attenuation value of approximately 40 decibels. This attenuation is based on averages over a frequency range of 128 to 4098 cycles. When glass is used for through vision, the sound control properties are comparable to other types of construction.

One of the most important properties of these steel partitions is their fire resistance. With rock wool insulation, steel partitions are totally incombustible. Another advantage is that offices built with steel partitions or wall linings take much less time to erect than walls of tile and plaster. They also eliminate the unpleasant features that attend the erection or dismantling of plaster and tile.

Steel partitions need only washing with soap and water to keep them clean. Laboratory tests prove that these partitions can take 400,000 brush strokes without deterioration of the enamel surface.

Castings and Plate Combined for Fabrication Economy

Designers at Falk Corp. obtain maximum economy in large weldments by proper use of both steel castings and steel plate in heavy machinery structures.

By OMER BLODGETT
Welding Design Engineer,
Lincoln Electric Co.,
Cleveland

MANY designers of machine tools and heavy machinery feel that welding and casting are incompatible, and that if one of these methods of fabrication is used, the other is automatically excluded. One example of a manufacturer whose designers know better is the Falk Corp. of Milwaukee. For more than 15 years, Falk has been using steel weldments and steel castings together in components of its own products, and has become well-known, besides, as a supplier of both steel castings and weldments to others. Some of the structures Falk builds up of steel castings and steel plates, particularly for large drive gear sets and other heavy machinery, are among the largest and heaviest produced anywhere.

Because the combination of weldment and casting is consistent with good functional design practice of using the right material in the right amount at the right place, this combination has resulted in lower manufacturing costs for Falk. Not only are costs lowered, but in addition, in many cases the combination makes possible certain special characteristics that might otherwise be difficult to achieve.

For example, a change in thickness or shape of material may be desired. Since steel plate is of uniform thickness, this change, if accomplished with plate, might entail some elaborate cutting and welding. On the other hand, a steel casting welded into the area can provide the desired change in section with a minimum of trouble and expense.

Of course the prime concern in all designs

is to arrive at the best possible construction from the standpoint of rigidity and strength. This is facilitated, too, in the use together of steel castings and steel weldments since both have the same modulus of elasticity. This means that for the same load and some section, they have the same rigidity.

Considerations of economy only, therefore, can direct the selection of the proper combination of steel plate and casting. Mostly, Falk uses steel castings for bearing support blocks, which involve heavy metal thickness and irregular shapes such as curved sections having oil grooves and drain pockets. These blocks would be both difficult and expensive to duplicate in steel plate. The cast bearing blocks are connected by simple plate sections which are welded together. This combination is more economical than making an entire casting of the complete unit.



FIG. 1—Steel castings and steel plate are combined in this base for a large Falk marine gear.

Fig. 1 is a base for a large marine gear drive which illustrates how economy dictates selection of materials. The large bearing block on the front side of the case is a large casting. The opposite

bearing block, on the back side, is cut from steel plate since it is neither too heavy nor too complicated for a clean flame cutting job.

In most designs, before assembly, castings are rough machined in the bores and on the surfaces

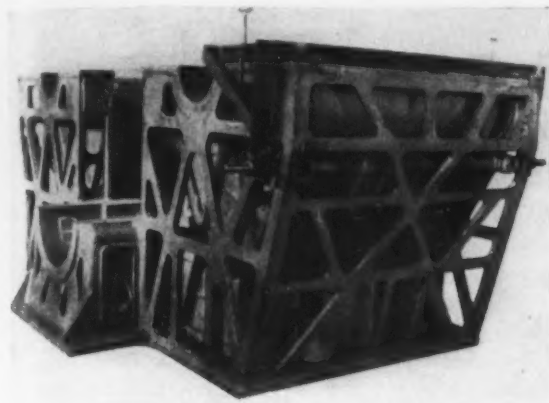


FIG. 2—This complex center section weldment for a large marine gear drive contains both steel castings and steel plate.

that will later be finish machined to provide mating surfaces for the two halves of the gear drive. The rough machining reduces the amount of final machining on the complete unit, which requires very large machines. The rough machined surfaces also give the layout man in the weld shop good reference surfaces from which

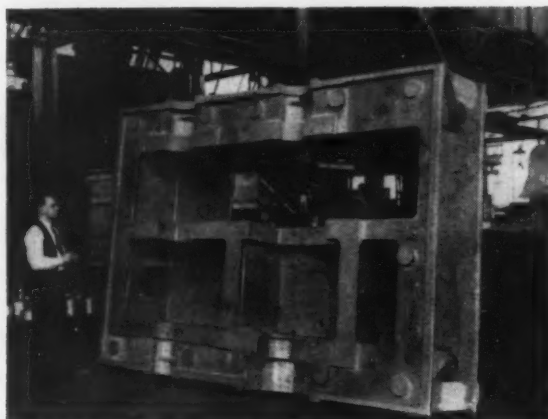


FIG. 3—The large steel castings used for bearing supports in this scale breaker drive base weldment are locally heated with gas torches during welding, to minimize tendency to cracking.

to work. In some cases the edges of the castings that join to steel plates are machined.

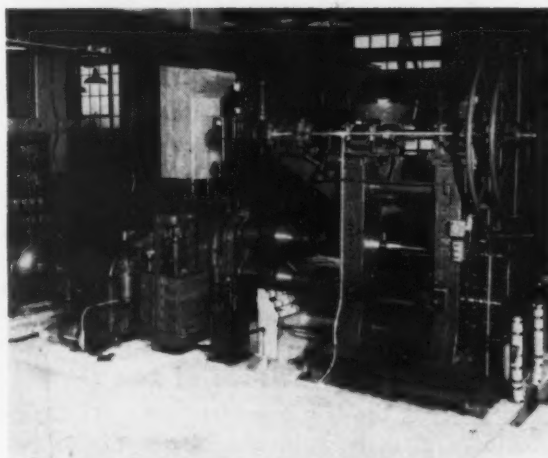
Large heavy castings, such as those used on the bases shown in Figs. 2 and 3, are usually heated locally by gas torches while welding to minimize the possibility of cracking. To further minimize the tendency to cracking, E-6016 lime-ferritic electrodes are used on the first one or two passes. The remainder of the passes are made with either E-6020 or E-6030 electrodes. A block welding technique is used and each pass is peened. On long straight seams automatic submerged arc welding is used.

NBS Gets New Rolling Mill

THE recent installation of a new two-high 16x24-in. rolling mill at the National Bureau of Standards is expected to facilitate greatly the preparation of metallurgical specimens for the Bureau's program of research on the structure, properties and behavior of metals and alloys. The mill, which takes 4-in. ingots or plate and is equipped for both cold and hot rolling, will be employed in a wide variety of studies.

Among these will be investigations of the melting and casting of metals in vacuum, investigations of magnesium and aluminum alloys including the use of light metals for housing construction, and work on the properties of ferrous metals including stainless steel. It will also be used for service operations for other Government agencies engaged in metallurgical work that do not have facilities for rolling.

A feature of the new rolling mill is a pair of internally steam-heated rolls, that will permit such work as the rolling of magnesium alloys in a temperature range of 400° to 600°F. Provision is made for raising and lowering the rolls electrically without the necessity of manual ad-



NBS ROLLING MILL: Farrell-Birmingham two-high rolling mill recently installed at the National Bureau of Standards takes 4-in. ingots or plate. Operations are controlled automatically from the panel board at extreme left just behind the motor.

justment. A hydraulic system, which provides support for the roll bearings, makes the changing of rolls a relatively simple operation.

How to Figure Overtime

UNDER NEW FLS ACT

Although the penalties for violating the Fair Labor Standards Act are severe, many employers are unintentionally breaking the law. Recent revisions changed the rules on overtime pay. Familiarity with two provisions of the Act and a few simple rules will save misunderstandings and avoid violations.



By MARSHALL GRANGER,
PARTNER
Marshall Granger & Co.,
New York

WHEN Congress amended the Fair Labor Standards Act last year it made important changes effective Jan. 25, 1950. Ample time was not provided for employers to become familiar with the new requirements. Furthermore, there was too much time delay before the regulations were written and questions were resolved slowly. Finally, the Act's general terms have been misinterpreted. All these have caused widespread, although unintentional, violations of the law.

The penalties for these violations are severe. Labor relations and even public and customer relations may also be adversely affected. Few employers would continue their present "unfair" practices if they had all the facts.

Some of the most complex and least understood problems relate to the overtime pay of employees for work done away from the employers' regular places of business. The special category of employees affected includes inspectors, repairmen, truckmen, branch warehousemen, watchmen, field representatives, supervisors, demonstrators, installation men, service men, delivery men and many other outside employees. This article is confined to the problems relating to these outside employees.

General Provisions of Law

In general, the law provides that: (1) Every employee must be paid a minimum of 75¢ per hr; and (2) every employee must be paid overtime equal to one and one-half times his earned hourly rate of pay for hours worked in excess of 40 in any one week. However, few employers realize that certain classes of employees are excepted from these provisions.

Employees working away from the employer's principal place of business must be paid additionally for time worked in excess of 40 hr in

FLS In Simple Terms

With growing emphasis on increased production, the problems of overtime pay loom larger every day. Mr. Granger, a director of the National Assn. of Cost Accountants, presents here the essence of the amended Fair Labor Standards Act as it relates to workers away from the employer's place of business. He lists each type of employee who is exempt from payment for work in excess of 40 hr a week. He also explains in detail two plans that can substantially reduce overtime compensation for special types of employees.

any week. Exceptions are those in one of the following classes: (1) Outside salesmen, but not including those who do other work in addition to selling, unless it can be proved that selling predominates. (2) Employees delivering goods sold at retail by a store classified as "local" because more than one-half of its sales in dollars are made within the state where their place of employment is located. (3) Executive, administrative or professional workers, whose salary is not less than \$55 a week in the case of executives and not less than \$75 a week in the case of administrative or professional employees.

Employees who are in any of these three classes need not, by virtue of the Fair Labor Standards Act, receive extra pay for hours worked in excess of 40 per week.

While the law provides for overtime pay at a rate of equal to one and one-half times the regular hourly earned rate of each employee, several alternative plans are available to most employers. Their use can substantially reduce the total compensation for overtime work. Two such plans are described here.

Plan 1 covers the guaranteed weekly salary

method of payment. If the nature of the duties of an outside employee are such that irregular hours are *necessary*, a special provision of the law, Section 7(e), allows his employer, in effect, to guarantee and pay a fixed sum as total compensation for each week regardless of the number of hours worked, provided they do not exceed 60. This is the only provision of the law that allows a fixed weekly wage from week to week without variation because of the varying number of hours worked.

In order to comply with the requirements of this part of the law, a contract or agreement must be made with each employee specifying the terms of employment and the exact nature of the guarantee. For example, the agreement must provide: (1) A regular hourly rate of pay of not less than 75¢ per hr; (2) compensation at not less than one and one-half times such rate for all hours worked in excess of 40 in any week; and (3) a guarantee of a fixed amount of pay to be paid every week regardless of the number of hours worked (not in excess of 60).

The amount guaranteed is the only compensation paid each week but it must be at least equal to what the employee would earn at his specified rate for the first 40 hours worked and at one and one-half times this rate for all hours between 40 and 60, or between 40 and some stipulated number of hours not over 60.

Most employers will find that a relatively small number of their employees fall within the above category. What groups of outside workers have duties which actually necessitate irregular hours of work? Newspaper reporters clearly have such duties. This was established by the leading case relating to this provision of the law which was decided by the U. S. Supreme Court (*Walling v. A. H. Belo Co.*, 316 U.S. 624). On-call service men and trouble shooters are in this class. Buyers, demonstrators, supervisors and adjusters, in most instances, have duties requiring irregular hours of work.

Irregular Work Week Contract

Plan II covers the irregular work week contract method of payment. A guaranteed weekly salary will not be practical for two types of outside employees. They include: (1) Employees who work irregular hours but only to suit their own convenience or their employers' preference and not because the nature of their duties makes irregular hours necessary. For example, a watchman for a building under construction might work four nights one week and three the next. Such employees cannot legally be paid a guaranteed weekly salary without additional overtime compensation for all hours worked in any week in excess of 40. (2) Certain employees may, by the nature of their work, be obliged to work such an irregular schedule of hours that the employer

OVERTIME PAYMENT FIGURES

Hours Worked	Dotted Line (Straight Overtime Compensation)	Solid Line (Irregular Work Week Contract)
40	80.00*	80.00
45	71.25	83.33
50	82.50	86.66
55	93.75	89.99
60	105.00	93.32
65	116.25	96.65
70	127.50	99.98
75	138.75	103.31
80	150.00	106.64
85	161.25	109.97
90	172.50	113.30

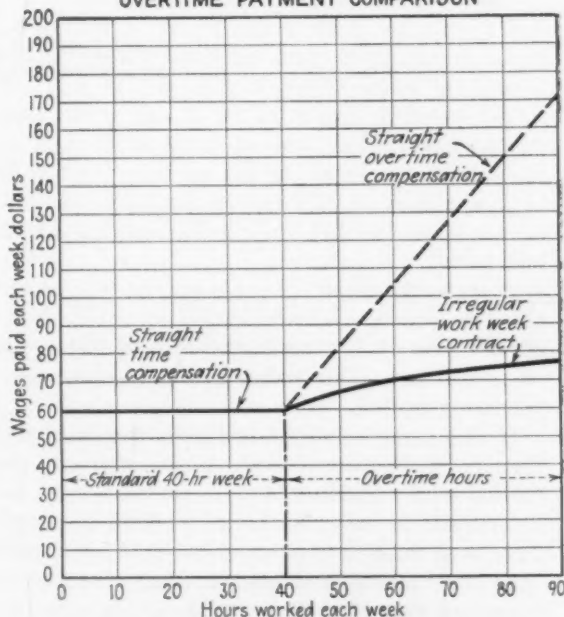
*—Based upon \$60 base pay per week.

wishes to pay them not only a guaranteed weekly salary but also some additional compensation for the weeks in which they are called upon to work more than the usual number of hours.

An outside repair serviceman may be called on an emergency job to work long hours in one week and the next week may be employed a lot less. A demonstrator may need to work much longer hours when he is in a certain area in order to complete his rounds by the weekend than when he is in another more sparsely settled area.

Many employees of these two types are hired at a specified salary with the knowledge that irregular hours will be incidental to their work. Section 778.3(b) (5) provides that an employee who is paid a fixed salary per week, works "... with the understanding that the salary is to cover all hours worked, and if his hours of

OVERTIME PAYMENT COMPARISON



IRREGULAR WORK WEEK CONTRACTS under the Fair Labor Standards Act have been worked out to cover outside employees whose hours of work fluctuate from week to week. Such employees may be paid a fixed salary, plus irregular overtime pay for all hours worked over 40 in any week. Irregular overtime pay is calculated by multiplying the overtime hours by one-half the straight time hourly rate. The hourly rate is arrived at by dividing the fixed weekly salary by the number of hours worked each week.

continued

A JOB INFORMATION SHEET similar to this one and containing the terms of employment in writing will aid mutual understanding between employer and employee.

4577 55011

JOB INFORMATION SHEET

Department _____ Division or Office _____

Job Title _____

Employee's Name _____ Clerk No. _____

Present Rate and Method of Compensation _____

JOB INFORMATION

1. Description of Duties of Job: _____

2. Degree of Judgment Required: _____

3. Supervision Received: _____

4. Supervision Given: _____

5. Manual or Physical Work: _____

6. requisite background of Experience and Training: _____

EMPLOYEE INFORMATION

7. Date Started on This Job _____ Date Started With Company _____

8. Employee's Background of Training, Skill and Experience: _____

This Job Information Sheet Prepared by _____ Supervisor

This Job Information Sheet Approved by _____ Works Manager

The above stated information is correct and applies retroactively to _____ or is subject to the following exceptions or changes: _____

(If no exceptions or changes, state NONE)

Signature of Employee _____

Date _____

work fluctuate from week to week, his regular rate of pay will vary from week to week and will be the average hourly rate each week."

For example, an employee may be paid a weekly salary of \$60 with the understanding that it is to cover his straight time compensation for all hours worked. In this case he will earn at the rate of \$1.50 an hr when he works 40 hr in one week, \$1.00 an hr when he works 60 hr, and 75¢ an hr if he works 80 hr in one week. Since his straight time for total hours worked is paid for by his \$60 salary, he will be entitled, in the event he works 60 hr in one week, time compensation in an amount equal to one-half of his earned rate of \$1, or 50¢ an hour for the 20 hr in excess of 40. This gives him total overtime compensation of \$10 (See accompanying graph and table).

If he works 80 hr in one week, he will be entitled to overtime compensation of one-half his earned rate of 75¢, or at the rate of 37½¢ for 40 hr overtime. This makes a total overtime compensation of \$15.

If this same employee had been working on a regular 40-hr work week basis without the mutual understanding and agreement that his salary was to cover all hours worked, he would have been entitled to one and one-half his earned rate of \$1.50 an hour, for all hours worked in excess of 40. For 60 hr worked, his overtime compensation would have been \$45. For 80 hr of work he would have been entitled to overtime compensation of \$90. As the number of hours of overtime in any week increases, the difference in overtime pay under the two methods becomes relatively greater, as shown in the graph.

If an employer will take the trouble to put in writing his agreement with each of his outside employees he will be on safe ground with either

of the two methods described above. New regulations require every employer to maintain a written record not only of the amount of regular and overtime pay and the details as to how it was computed, but also of the "terms of employment" of every employee. This stops short of requiring a signed employment contract. In the eyes of the law an oral understanding is just as good and many employers hesitate to present written documents for signature to all or even some of their employees. However it is difficult, often impossible, to prove the exact terms of an oral agreement even though "memorandum" in the files help.

Job Information Sheet

One plan for overcoming this impasse has been used successfully. It is to draw up a job information form setting forth the duties and terms of each type of work. This form can be filled out for each outside worker, thus putting in writing the terms of his employment and his duties. After necessary revisions by the employee and his immediate superior it can be signed by both. The accompanying illustration shows both sides of such a form. The important point is to describe with precision the regular hourly or weekly rate of compensation and the method of paying for overtime work.

By adopting the plans described and putting the agreements on paper employers will comply with the law and prevent misunderstanding with employees.



RIGID CONSTRUCTION of tool holders is evident in this view of rear axle shaft lathe. Back-up rollers which help hold work steady are also visible. Rough forging before machining is in background.

Shafts Machined 500 Pct Faster With Carbides

By FRANK HAEGER

General Supervisor, Production Engineering,
Oldsmobile Div., General Motors Corp., Lansing, Mich.

Redesigned lathes, and adoption of carbide tools have effected a big increase in Oldsmobile axle shaft production. Tool holders are unusually massive and roller followers support work rigidly.

N ECESSITY for higher output of rear axle shafts recently led production men of the Oldsmobile Div., General Motors Corp., to completely revamp the setup for turning these shafts. Prior setups followed closely the recommendation of lathe manufacturers based on the use of high speed steel tools with normal speeds and feeds for rapid production work. It required three such lathes to rough and finish turn an average of 30.6 shafts per hr.

Today, redesigned LeBlond lathes using features developed by Oldsmobile and specified

in the new design, plus carbide tools ground and mounted to Oldsmobile specifications, each turn out 57.8 shafts per hr. Finish is superior and costs are substantially lower.

Axle shafts are forged from SAE 1330 steel and heat treated to 341 to 388 Bhn before turning, as in prior production.

Initially, it was considered necessary to use a two-speed motor arranged to drive the shaft at 410 rpm for the turning of the smaller diameters and then at 260 rpm for facing the flange. This made it necessary to complete the turning of small diameters before the facing tools

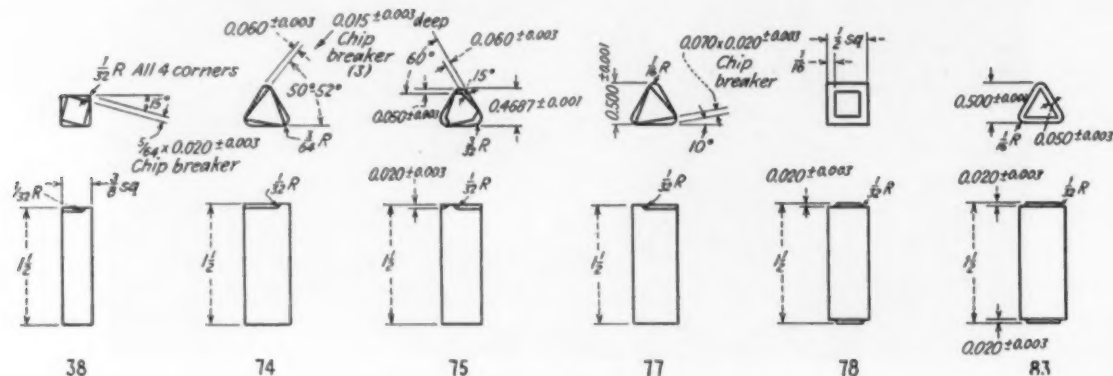
fed in, yet about 50 axles per hr were completed. Later development proved that all work could be done at a single speed even higher than the higher of the two speeds formerly used, and the shaft now is turned at 450 rpm during all cuts.

Since the depth of cut and the feed are the same and both turning and facing cuts are

TOOL CUTTING SPEEDS

Tool No.	Operation	Surface Feet Per Minute*
63	Facing.....	751.5 max
75	Facing.....	751.5 max
77	Turning diameter.....	360
74	Turning diameter.....	180.45
76	Turning diameter.....	180.45
38	Turning diameter.....	138.575
78	Chamfering.....	138.575

* Shaft turns at 450 rpm.

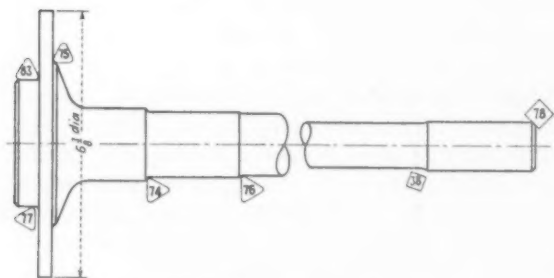


CARBIDE TOOLS used for the seven turning and facing operations on Olds' rear axle shaft.

made simultaneously, the machining time is further decreased and the average output has been raised to 57.8 per hr. This is accomplished without detriment to quality of work or to tool life.

All tools are $1\frac{1}{2}$ in. long and are so set as to provide negative rake. All are of standard triangular or square section and have either three or four cutting points, each with the same grind in the same tool. With this arrangement, if a tool edge breaks or becomes dull or cuts oversize, the operator need only turn the tool 120° or 90° and set the point to gage distance from the holder to continue production.

In the present setup the shaft is roughed and



REAR AXLE SHAFT produced by Oldsmobile, showing tool arrangement for turning and facing operations. With the shaft turning at 450 rpm, some of the machining cuts reach a surface speed of 751.5 sfpm.

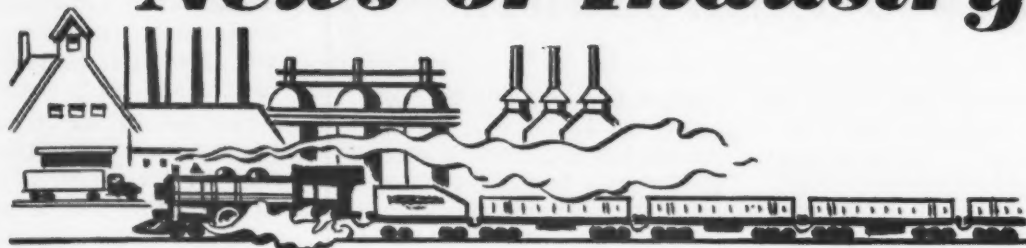
finished in a single setting and a possible output of 72.6 per hr is attainable. A total of seven tools is used. Feed is 0.019 in. per rev.

Most of the turning tools are at the front and first are fed to depth by cams, then are fed longitudinally the specified distance. They then back off and return to starting distance automatically. Facing tools feed in simultaneously from the back and, when cuts are completed, back off to starting position. Work is loaded and unloaded by hand but the tailstock center is moved by an air cylinder.

Success of this installation is partly a result of steps taken to support each tool in an unusually rigid holder and to avoidance of chatter by supporting the work rigidly. Roller supports that feed along with the tools which turn the bearing and the outer end that is later splined are important aids toward keeping the work from chattering.

As a result of the Oldsmobile research, the lathe makers have redesigned the lathe to incorporate the changes found to be beneficial. The present machines used in Oldsmobile production and here illustrated are of this type. Besides being exceptionally fast producers, these machines involve fewer tools than in conventional setups for the same work, and simplify both setup and maintenance operations. A soluble oil is employed as a coolant and is fed in large streams directed at each tool. Chips are readily broken up and are not troublesome.

News of Industry



Machine Tools Slip Behind Iron Curtain

NMTBA's Tell Berna charges that U. S. cuts off machine tool exports to Russia and cohorts, yet permits ECA-aided nations to sell . . . Says Western Germany sells war machine tools.

Cleveland — While Washington virtuously denies Russia and company imports of American machine tools for fear that they might augment their military potential, ECA funds are vastly strengthening West German and European machine tool industries that are supplying the Reds, charged Tell Berna, general manager of the National Machine Tool Builders' Assn.

Germany Sells to Reds

He said that Winston Churchill's recent disclosure that England is shipping machine tools to Russia was only part of the story and that other countries receiving ECA aid, France, Italy, and West Germany are also shipping into the Red camp.

Mr. Berna said that West Germany, whose recovery program has been financed by the American taxpayer, was selling machine tools to Russian orbit countries—under permit of the American military authorities. Horizontal boring mills, crucial in the manufacture of armaments, are being built in Offenbach for shipment to Poland while in Frankfort, way grinders are being made for Hungary, he charged.

"In Italy," Mr. Berna continued, "ECA helped to finance machine tool production on behalf of post-war rehabilitation. But today there are more manufacturers of lathes and vertical drilling ma-

chines in Italy than in the United States. Why? Italy does not need that much machine tool capacity. Is the Russian market the answer?"

Shipments of American machine tools to Russia and its tovarich nations were halted about 2½ years ago and the State Dept. recently stopped export of some American machine tools to Italy, France, and Sweden, warning that products of the equipment might fall into Red hands, indicated Mr. Berna.

He described the situation as withholding with one hand and giving with the other. "We have discussed it time and time again

with the Dept. of State, the Dept. of Commerce, the National Security Resources Board, and various heads of the Armed Forces—without result," he said.

"The tanks and guns used by the North Koreans may have been made on machine tools which ECA money helped finance. Mr. Churchill has called international attention to a situation which cries for immediate corrective action. If we have in fact an Atlantic Pact for mutual defense, why should not our allies in this pact observe the same precautions ruled imperative for the U. S. by our State Dept.?"

In the past machine tool makers have criticized ECA spending to build up the European machine tool industry to the detriment of America's. They pointed out that a strong machine tool industry means strong war production potential and that consequently the U. S. was, in effect, cutting its own throat.

ECA Statement Answers Tell Berna Charges

Says U. S. machine tool men can trade with Eastern Europe on all but 200 strategic items . . . Must be paid off in materials though . . . Claims Atlantic Pact nations supervise shipments.

Washington—The Economic Cooperation Administration rebuffed the statement of Tell Berna, general manager of the National Machine Tool Builders' Assn., that England, France, and Italy were bolstering their industries with the aid of ECA funds and while members of the Atlantic Pact group were shipping machine tools behind the Iron Curtain. When asked by THE IRON AGE to reply to Mr. Berna's

blast, the ECA termed that part of his charges as "completely misleading."

Commenting that a "limited statement" did not provide adequate space for explanation of the trade of a dozen nations with a half dozen others, the ECA nevertheless laid down a counter-barrage of criticism to Mr. Berna's points:

(1) There is a difference between

INDUSTRIAL SHORTS

MEETING DEMAND — H. C. FRICK COKE CO., Pittsburgh, will open a new 4000-ton a day coal mine in Washington County and the Collier mine of the same capacity, closed since 1928, will be reopened in Fayette County. Collier mine is expected to be ready for mining operations in about 1 year and the Washington County mine is scheduled to start producing early in 1952.

PIPELINE UNDER WAY — Ground has been broken southwest of Houston for the new 30-in. diam natural gas pipeline which TEXAS ILLINOIS NATURAL GAS PIPELINE CO. is building from the Texas Gulf Coast field to the Chicago area.

CONTROLLING INTEREST — AMERICAN LAUNDRY MACHINERY CO., Norwood, Ohio, has acquired controlling interest in the Huebsch Mfg. Co., Milwaukee. The Huebsch Co. will continue in Milwaukee with Monte Huebsch, Joseph Huebsch, Jr. and Frank Wright directing activities of the new division.

ELECTS VP — Dr. Gustavus J. Esselen, vice-president of the U. S. Testing Co., Inc., was elected vice-president of the SOCIETY OF CHEMICAL INDUSTRY which maintains its headquarters in London.

TAKES OVER — V & O Press Div. of Rockwell Mfg. Co., Hudson, N. Y., has been purchased by HARTFORD-EMPIRE CO. The plant will continue under the management of Herman F. Zorn and no personnel changes are contemplated.

FRENCH AGENT — G. T. GREGORY & CO., New York, has expanded its representation of French metal producers in the United States handling all steel products, aluminum, copper and brass. This activity is under the direction of Pierre Schweitzer.

PRODUCING PLASTICS — A substantial expansion of the B. F. GOODRICH CHEMICAL CO. plant at Avon Lake, Ohio, covering 7 acres has been started. The new manufacturing facilities will produce Geon polyvinyl chloride resins and will be completed in mid-1951.

HAPPY ANNIVERSARY — On Sept. 25 the PENNSYLVANIA SALT MFG. CO., Philadelphia, will reach its 100th anniversary. During that week the company will hold various events commemorating this milestone.

ALUMINA PLANT — Aluminum, Ltd., Montreal, has announced that its wholly-owned subsidiary, JAMAICA BAUXITES LTD., plans to begin construction, as soon as materials and equipment can be obtained, of its long planned \$8 million alumina plant in Jamaica, British West Indies.

SELLS PUMP DIV. — Quimby Pump Div. of H. K. Porter Co., Inc., Pittsburgh, has been sold to WARREN STEAM PUMP CO., INC. Porter is withdrawing from the manufacture of screw pumps in order to devote itself more fully to its other lines of business.

GROWING — Another store in Easton, Pa., has been opened by FEDERATED PURCHASER, INC., electronic requirements distributor with stores in New York, Newark, N. J. and Allentown, Pa.

ABSORBS V-MAC — V-Mac Industries, Inc., Guilford, Conn., manufacturers of pipe threading, cutting and reaming tools, has been acquired by the CAPEWELL MFG. CO., Hartford, Conn., producers of hack and band saws, hammers, special nails and parachute hardware. All manufacturing facilities and personnel will be retained and moved from Guilford to Hartford.

strategic and non-strategic items. There are, for instance, about 100,000 items classified as machine tools, but the U. S. controls the export of not over 200. Consequently, our own manufacturers are free to ship all they wish of the other 99,800 if they get orders and are willing to take Polish coal, Russian wheat, and Bulgarian rose oil in payment. The statement that England, France and Italy are shipping eastward millions of dollars worth of "machine tools" is therefore completely misleading. ECA knows that most of the items which are embargoed by the U. S. are also either embargoed or strictly controlled by the nations of the North Atlantic treaty.

(2) Trade between western and eastern Europe is not similar to the shipment of scrap iron by the U. S. to Japan prior to World War II. The U. S. then received nothing which increased our industrial strength or war potential.

A partial list of important items being currently received by the West from the East is—lead, zinc, chrome, bauxite, manganese ore, ferromanganese, iron and steel plate, seamless and welded tubes, diesel engines, tank cars, crude oil, benzol. This is in addition to food, timber and coal, which are necessary to feed and house people and to keep western factories operating.

(3) The importance of European recovery as a military fact is too often minimized. Basic in ECA's thinking has been the realization that the economic recovery and revitalization, which includes morale, of western Europe is the *sine qua non* of any plan to halt the communist plan of world conquest.

(4) Also generally overlooked is the highly desirable psychological effect of keeping before the oppressed peoples in the satellite countries the fact that only the free and independent nations of the West are able to produce and supply certain essential goods.

(5) ECA is fully conscious of the fact that East-West trade, as a problem, consists of three parts—recovery, military security, and in-

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ternational relations, which includes coordinated activities. No single part of this problem can have any real existence separated from the other two and consequently decisions should not be arrived at without a full consideration of all three parts.

Although the ECA statement magnanimously assured American manufacturers that they could sell machine tools of the unrestricted variety to Europe, it is doubtful if a firm in Cleveland wants to accept Bulgarian rose oil as a bartering medium.

ing out how he could best slow or stop production.

This time industry must also plan on what to do in case of enemy attack. And it is likely to come in the early phases of any future war. The atomic bomb may be used in heavy industrial areas. "The Effects of Atomic Weapons," obtainable for \$1.25 from the U. S. Government Printing Office or on bookstands, is already a bestseller. It, or a synopsis such as that compiled by the "New York Times" (price 10¢) is recommended reading.

Enemy agents are more active today and harder to uncover than they were during past wars. In times of "peace" the enemy prepares for attack. Internal security

Turn to Page 135

What to Do About Plant Protection—Now!

Espionage and sabotage are serious threat to industry today

... World War II techniques must be revived and revised ...

Defense Dept. booklet lists steps to take.

Washington — Espionage and sabotage are a very real and critical threat to industry today. Management, with government cooperation, was almost 100 pct successful in coping with enemy agents during World War II. Obviously, the current crisis will require infinitely more emphasis on plant protection to achieve anything like success.

The techniques developed during the last war are now being taken out, polished up and inspected. As government contracts are signed, plant security measures are being revived. For many, the technique is new, for all some review is needed. And some entirely new hazards (atomic bombing for one) have been introduced. In a 24-page booklet scheduled for release this week, the Defense Dept.'s Munitions Board points out the problem and suggests ways of meeting it. The booklet, "Principles of Plant Protection," was prepared by the Internal Security Div. of the Board's Office of Manpower.

Copies of "Principles of Plant Protection" can be ordered from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. at 15¢ per copy.

Espionage, the security people say, is the foundation upon which all other enemy actions are based. Sabotage will be a real problem. The possibilities of enemy attack are present today as never before. Disaster relief and damage control plans will be needed to get plants back in operation as fast as possible.

The Defense Dept. hopes that management will start at once to think about the hazards ahead and plan on how to cope with them. Enemy agents are now working in American industry. Sabotage could come soon; perhaps the best way to find out where it will strike is to give a plant official the job of figuring

Types of Sabotage

Damaging buildings and equipment by explosives, fire, breakage, abrasives, chemicals, or addition of foreign bodies, explosives or fire.

Damaging power systems, communications, water supplies, and other utilities, taking advantage of bad conditions to avoid suspicion.

Tampering with gages, precision tools, and testing devices.

Tampering with blueprints, formulae, or working models.

Infecting or otherwise polluting water and foodstuffs, tampering with ventilating systems and other personnel safeguards.

Creating conditions which would injure personnel.

Contaminating or interrupting the supply of raw materials.

Labor sabotage, including the fomenting of strikes, unrest, personal antagonism, excess or inopportune spoilage of work and "slowdown" operations, provocation of fear or work-stoppage on account of false alarms. (Lines must be drawn between legitimate disputes and sabotage.)

How Spies Work

Infiltration into plants as employees, visitors, inspectors, or by other means.

Obtaining information from employees by (a) stealing, (b) purchasing, or (c) encouraging them to "talk shop."

Stealing information from records or other sources and reporting personal observations and studies of production operations, test runs or classified materials.

Using various means of reproducing documents, products, processes, equipment, or working models.

Using "fronts," such as commercial concerns, travel agencies, import-export associations, scientific organizations, insurance agencies, businessmen's groups, and other organizations to obtain confidential information or pertinent statistical information which can be translated into strategic information. Using threats of danger to friends or relatives of an employee, to obtain information.

Skillful extraction of information from members of the family or close friends of an employee.

Picking up information in social gatherings.

U. S. to Reopen Nickel, Magnesium Plants

Nonferrous spending to total \$14 million . . . To reactivate nickel plant in Cuba and to spend \$9 million on five magnesium plants . . . More TVA funds asked—By Gene Hardy.

Washington—The Federal Government jumped into the nonferrous metals field with both feet last week. Perhaps the biggest news to the metalworking industry was that \$5 million was to be spent to relieve acute shortages of nickel by reactivating the idle nickel facilities at Nicaro, Cuba. In addition, some \$9 million dollars will be spent to reopen five magnesium plants.

No public announcement has been made of these plans. THE IRON AGE, after noting a Presidential request to Congress for a

change in appropriation language which would boost from \$6 million to \$14 million funds for reactivation of industrial plants, was able to learn what plants the President had in mind. His message to Congress made no reference to the actual plants.

Cancel Aluminum Spending

The original \$6 million to be taken from the stockpile appropriations was for the reactivation of idle aluminum facilities. But since arrangements to reopen these works have been made with commercial interests (THE IRON AGE, Aug. 17, p. 104), the \$6 million will no longer be needed for this purpose. Instead, a total of \$14 million will be spent to boost production of nickel and magnesium.

The Nicaro Nickel Co., a sub-

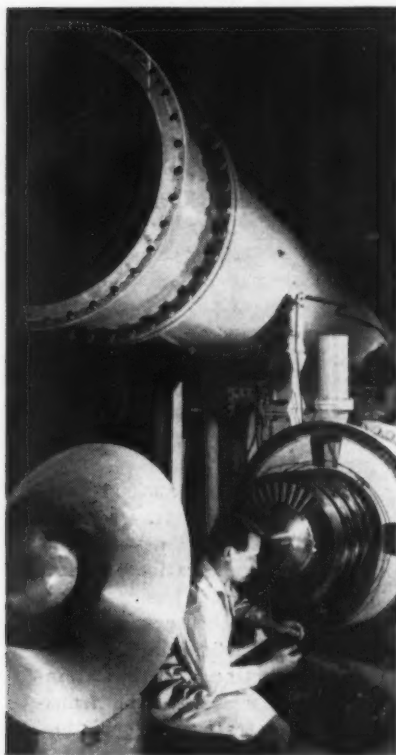
sidary of the Freeport Sulphur Co., was RFC-owned and financed. Production was started in late 1943 and for that year 2430 metric tons were turned out.

Production for the succeeding years was as follows—1944, 4679 tons; 1945, 10,900 tons; 1946, 11,240 tons, and 1947, 2014 tons. Operations were discontinued on Mar. 31, 1947 and the plant was declared surplus on July 11, 1947 and remained idle since that time.

Locations of Plants

The five magnesium plants to be reopened are located at Wingdale, N. Y.; Painesville, Ohio; Valasco, Tex.; Spokane, Wash., and Manteca, Calif. Dow Chemical Co. has been operating the government's one other magnesium plant located at Freeport, Tex.

In addition, the President has asked Congress for an additional \$28.5 million for TVA. One of the major reasons for this increase, the President stated, is "to furnish reliable and continuous power service to existing aluminum, ferro-alloy, and other important industries."



JET TESTER: To build more powerful and efficient jet engines for fighting planes, this low-speed wind tunnel at the Westinghouse Aviation Gas Turbine Div., South Philadelphia, places little strain on parts and permits engineers to make quick and less expensive design changes. Man is shown preparing a newly-designed jet compressor rotor for tests. The device at left swings around and supplies air to the rotor.

Austria Orders Rolling Mills

Pittsburgh — Lewis Foundry & Machine Div. of Blaw-Knox Co. has received an order from Alpine Montan Co., largest steel producer in Austria, for three rolling mills and auxiliary equipment for rolling steel strip up to 18 in. wide. The equipment will be installed in the Kreiglach plant at Leobon, Styria, Austria.

Hold Mine Lighting Clinic

Cleveland — The nation's first clinic on coal mine lighting attracted some 30 producers, operators, representatives of the United Mine Workers and equipment manufacturers to the General Electric Co.'s lamp department headquarters at Nela Park recently. Sponsored by the National Coal Assn. the meeting was aimed at better application of lamps and lighting in mines.

Israel Turns to Industry; Builds New Haifa Steel Plant

Haifa—The fledgling state of Israel is turning to industrialization and is taking a long stride by erecting a \$3 million rolling mill in the industrial section of Haifa Bay. To be known as the Israel Rolling Mills Ltd., the plant will get an important addition later—an electric furnace to make the 6-in. billets which will at first be imported from Belgium or Yugoslavia. The mill will have a capacity of 60,000 tons a year.

Being built are three rolling mills: a 3-stand, 3-high 18-in. merchant mill to use 6-in. billets and roll small structurals, bars, flats, small channels, and rerolling billets; a 5-stand, 3-high 12-in. and a 4-stand, 3-high 10-in. merchant and rod mills to roll smaller sections.

The plant's rolling mills were

built by Demag, Germany, and were destined for shipment to Japan during World War II. When hostilities ended, the valuable prize was impounded at Dunkirk and sold to Israel. America is expected to supply electrical equipment, rolls, and a furnace.

In anticipation of installing the electric furnace, a scrap stockpile has been amassed and the program is now continuing. H. A. Brassert Co., New York, is serving as consultant.

Form Largest Federal PA Unit

Washington — A new Federal agency, Emergency Procurement Service, began operations this week as the government's number one purchasing agent of scarce materials. It will consolidate all government buying of strategic and critical materials and supervise all other emergency purchasing programs.

Functions of the new agency will be purchase, storage, transportation and market research of shortage materials, including ECA purchases.

Chicago Firms Get Defense Orders

Chicago—Sixty-three contracts totaling \$7,626,156 have been awarded to 56 companies in the Chicago industrial area by the Department of Defense and General Services Administration since the beginning of the Korean war.

Among the largest contracts given out recently, according to the Chicago Assn. of Commerce and Industry, are: International Harvester Co., trucks, \$113,412; Inland Rubber Co., tires, \$229,500, and Naylor Pipe Co., steel pipe, \$159,460.

GM Buys Stinson Aircraft Plant

Detroit—The former Stinson Aircraft Co. plant and airport in the Romulus Township has been purchased by General Motors and will be operated by its Detroit Diesel Engine Div. for the manufacture of auxiliary generators. The generators will go to the tank plant of the Cadillac Motor Div.

Labor Forcing Showdown on Wage-Price Freeze

Labor leaders step up wage drives to beat wage-price freeze . . . But showdown may come after fall election . . .

Murray confirms steel wage demands—By Bill Packard.

New York—Labor leaders, fearful of a wage-price freeze are already hard at work hammering out fifth-round wage demands. If they are successful they will inevitably bring about a showdown on this question—whether President Truman wants it or not. But the showdown may be delayed until after the fall election, which would be all right with him.

The President has steadfastly insisted that he doesn't want mandatory wage-price controls at this time. But he is pleased to accept such authority on a standby basis—to be exercised when he thinks it is needed.

Fifth Round Pattern?

Here is the pattern of fifth-round events which has started shaping up within the past few days: (1) General Motors workers received a 5¢ an hr cost-of-living raise. (2) Chrysler signed an agreement with the union calling for a 10¢ an hr wage boost. (3) Packard agreed to a 5-year, GM-type pact providing \$125 pensions, 4¢ an hr wage rise and 5¢ an hr cost-of-living adjustment. (4) John L. Lewis poured dripping sarcasm on Bill Green's no-strike proposal. (5) Phil Murray, attending a meeting of the CIO executive board in Washington, fired the first gun in the wage assault expected this fall by United Steelworker shocktroops of the CIO.

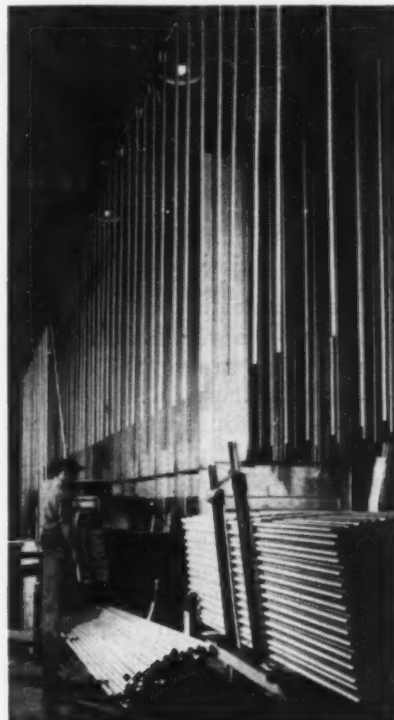
Meanwhile, Ford workers interrupted operations briefly at the Rouge plant last week when they walked off their jobs.

Later they won a GM-type contract with an immediate wage increase of 8¢ an hr and \$125 pensions. Their old contract was to have run till January. A strike of electrical workers which would have paralyzed General Electric Co. plants was stayed by a last minute plea by Cyrus Ching, federal

mediation conciliator, on the grounds that it would hamper defense production.

So far the pattern of wage increases shapes up to about 10¢ an hr. Many of the smaller firms, already feeling the pressure of rising costs, plainly couldn't pay that kind of money. But labor's ace in the hole will be the manpower shortage, with the accompanying threat of labor pirating.

As usual, the steel workers can be expected to set the wage tempo in the metalworking industry. That's why Mr. Murray's admission of their intent is so im-



TUBULAR PRODUCTION LINE: Anti-rust coating of vinyl plastic is deposited on these tubes as they move through long box-like structure in background at Electricweld Tube Div. of Jones & Laughlin Steel Corp., Oil City, Pa. J. & L. calls this product, "Perma-Tube," now produces it so that one end can be fitted into another to form a firm mechanical joint stronger than the rest of the tubing, without the use of bolts or other attachments.

portant, even though it comes as no great surprise.

Most basic steel contracts can be reopened for wage discussions Nov. 1. Dec. 31, 60 days later, the steelworkers are free to strike in support of wage demands if no agreement has been reached. Last fall they pressed, and won, a month-long strike for \$100 a month, noncontributory pensions. They also received a social insurance package, though on a contributory basis. They did not get a wage boost at that time.

CIO Airs Its Views

The United Steelworkers' wage policy committee is scheduled to meet the last week in October to make final decisions on wage demands, although Mr. Murray said he could get them together sooner.

After their Washington meeting the CIO executive board issued a long statement calling for an excess profits tax, controls on consumer credit, and price controls on selective commodities. They said that prices of basic commodities should be rolled back to pre-Korean levels—but that unions should be left free to bargain for higher wages.

Union Strategy No Secret

This "economic policy" statement conforms with the usual pattern of union strategy: They will argue that "there is ample room for wage adjustments without disturbing existing price levels." And they will point to steel company profits this year to support their argument.

They will also use the same tactics on unemployment insurance that they used on pensions—hoping that by forcing industry to pay unemployment compensation they can win an ally in their drive to widen government unemployment benefits.

Yale & Towne Revises Wages

Philadelphia — Wage increases and other benefits are included in a new 2-year agreement between Philadelphia Div. of Yale & Towne Mfg. Co. and International

Assn. of Machinists reached here last week.

The wage increases average 15¢ per hr. The new agreement also includes a new "standard hour" wage-incentive plan that gives employees a chance to earn extra pay for extra production. About 1800 workers are affected by the labor settlement.

Armco to Spend \$15 Million On Ashland Plant Modernization

Middletown, Ohio—A \$15 million modernization program for Armco Steel Corp.'s Ashland, Ky., plant is scheduled to begin about the first of next year. It is expected that the job will be finished in some 12 to 15 months.

Plans are not yet completed and no contracts have been let with the exception of those for electrical equipment. For this reason, accurate estimates of the total cost cannot yet be made.

A modern slabbing mill will be installed, along with other equipment necessary to produce steel coils 72 in. wide.

The Ashland mill, a continuous jobbing mill which rolls individual sheets, was started in 1924 and was the world's first successful continuous sheet rolling mill. Introduction of the hot-strip principle and other developments put this mill out of date.

Canada Shows May Output Rise

Toronto—May production of primary iron and steel shapes in Canada was 381,058 net tons against 325,448 tons in April and 314,633 tons in May 1949. May output included 365,448 tons of carbon steel shapes and 15,810 tons of alloy steel shapes.

Swedish Steel to Modernize

London — Swedish steel will spend \$75,463,000 over the next 2 years to expand and modernize its facilities. Mechanization will be increased but the industry will need 2900 more workers by the end of 1950.

Military Procurement Men To Buy Through Fixed Price Contracts

New Defense Dept. policy will allow adequate profit as incentive.

Washington—The Pentagon has decided to do most of its buying through fixed-price contracts.

Armed Forces procurement officials say they hope the move will save the government money and at the same time encourage efficiency in production.

The Defense Dept., in outlining its new buying and pricing policy last week, said it expected to allow "adequate profit margins" as an incentive for efficient industrial performance. But it warned that allowances for contingencies "would be cut out to the greatest extent possible."

Conserves and Supports

The effect of the new pricing policy is to conserve limited manpower, materials, facilities, and other resources, as well as to support government controls over prices, wages, and materials, according to the Munitions Board, over-all buying agency for the Army, Navy, and Air Force.

"Fixed-price contracts will be used without provision for price redetermination or escalation throughout the Defense Dept. whenever practicable," the board stated.

But it is indicated that "incentive-type" contracts would be used where dollar amounts are large, production periods long, and when "reasonably close" target prices can be established.

Wants Detailed Estimates

The new policy will limit cost-reimbursement type contracts to cases in which other types of contracts are "not suitable," and where the contractor's cost recording system facilitates audit and where close checks can be made during performance of the contract to assure that the contractor is not employing "wasteful or extravagant methods."

Detailed estimates will be required of price components on

negotiated prime contracts and major subcontracts, the board warned.

Prevent Excessive Profit

"Emphasis will be placed on the prevention of excessive profits through close forward pricing and repricing, rather than through re-

capture of excessive profit by renegotiation.

"Prevention of excessive profit in advance is considered to provide not only stronger incentive for good performance, but stronger support for wartime production, distribution and stabilization controls," the board summarized.

Inertia, Lack of Materials Slows Carbuilding

Chief pitfall of railroads' plan to build 122,000 cars is materials shortage . . . Builders must compete in tough market . . . Steelmen irked at program timing—By John Delaney.

Pittsburgh — The freight car building program will gather momentum slowly. Guesses as to when a 10,000-car-per-month pace will be reached range between next March to May. Even then, the Assn. of American Railroads' recommendation that 122,000 new cars be added to the fleet will be far short of fulfillment.

There are a number of reasons why the industry will be slow to get into peak production. Chief of these is realization that a car shortage existed came at a time of extreme shortages in the materials needed to build them.

Compete for Materials

The car builders must compete with other industries for such hard-to-get items as steel plates, sheets, bars and shapes, and lumber. Other much-needed materials include castings and steel wheels. Wheels are growing tighter. Virtually all the other items are, too. Recruitment of manpower isn't serious, but may get worse as the defense program picks up momentum. Welders and riveters will be in strong demand, many to be trained from scratch.

There has been a lot of buck-passing on the steel problem. The steel producers say they are shouldering their share of the tonnage needed by the builders, that the program is not suffering for lack of plates, sheets, etc. The car builders say this isn't necessarily so. An industry spokes-

man pointed out, for example, that the steel needed for the 10,000 cars ordered by the Pennsylvania Railroad last May won't be forthcoming until October. One builder said he could double his production—if he could get the steel.

Peeved at Roads

In the absence of a Government allocation program designating critical end uses of steel products, steel producers are doing the best they can. Other good customers are clamoring for these products; some of them could be considered just as critical as freight cars. Privately, the steel companies are sore at the railroads for waiting

so long to get their building program underway. They point out that the carriers went along for months while steel was more plentiful and the carbuilders were starving for business; that they couldn't have picked a worse time to start ordering.

Overlooked in the AAR's estimate of the number of new cars needed is that it recommended a net increase of 122,000 cars. Assuming that the carbuilders reach the 10,000-car-per-month level, or higher, as some authorities believe possible, the net addition to the fleet will be only a fraction of that. The railroads, on the average, scrap about 6000 cars per month. Retirements in May were 6889; in June 7354, and in July 6280. It is estimated that it will be necessary to build about 300,000 cars at the rate of 10,000 per month to realize a net increase of 122,000.

How much steel would be needed to support a 10,000-car-per-month program? An average of about 20 tons per car, or 200,000 tons per month. Add another 50,000 tons per month to this for car repairs, and the total is 250,000 tons, most of it in plates and sheets—plates for open tops, sheets for box cars.

McKees Rocks Plant

The carbuilders believe that if things go well they might reach a level of 12,000 cars per month, maybe better. They built almost that many in April 1949. Under ideal conditions they feel they might even touch 16,000. That's problematical. Some Washington people are shooting for 15,000 per month. The industry lost a 40-car-per-day plant recently when Pressed Steel Car Co. abandoned its McKees Rocks plant, but a spokesman pointed out that this could be offset by adding capacity to other plants.

In a way, the railroads themselves are moving too slowly for the carbuilders. Estimates are that cars on order as of Sept. 1 were about 80,000. The carbuilders would like to have 100,000 or



"Well, well, Miss Jones, I must confess I had a different idea entirely when they told me J.B.'s secretary was hard to get past."

more on the books for better long-range planning.

Planning and procurement are the two most important problems confronting the carbuilders. It's too much to expect that a big industry can come to life overnight and shift into high gear almost immediately. An industry that last spring was out scratching for business must stock up on a lot of things before it can begin rolling. It is doing this now, probably will fare better when the Government makes up its mind on an allocations program.

A bright spot in the picture is that as the number of new cars increases, car efficiency also rises. A new car is a better car. The AAR estimates that new cars installed in the last 5 years are about 20 pct more efficient than cars that are 20 or 25 years old. Miles per car per day, a good measuring stick in time of car stress, was 44.1 in 1948, probably is higher today; in 1927-28 it was 32.3. Train speed in the first 7 months of 1949 averaged 16.9, as compared with 13.2 in 1929. Car capacity as of Sept. 1, 1949 was 52.26 tons, compared with 46.14 tons in 1929.

Congressman Slams U.S. Plan To Stockpile Canadian Aluminum

Washington—Opposition to government stockpiling of imported aluminum was raised in Congress last week.

Rep. Flood, D., Pa., declared that U. S. aluminum producers, with government help, could meet all demands for war production and for stockpiling.

The Munitions Board and the National Security Resources Board have been discussing plans to import Canadian aluminum for stockpiling. Flood said it would be "sheer folly" for the U. S. to become dependent upon an outside producer of aluminum to meet military needs without first giving U. S. producers an opportunity to tackle the problem at no greater cost.

Instead of aiding foreign pro-

ducers, he said, the government should "do everything possible to encourage the American aluminum producers to expand capacity." This, he said, could be done through faster write-offs on equipment, cash advances against production, and long-term supply contracts.

Reynolds Metals Co. and Kaiser Aluminum & Chemical Corp. have notified the Munitions Board that they are ready to discuss any proposal to expand domestic production.

German Reparations Extrusion Press Offered to Highest Bidder

Washington—A partially-completed German extrusion press is being offered for sale by the State Dept.

Now located at Hannover-Linden, Germany, the 12,000-ton capacity press will be sold to the highest bidder on Oct. 10 on an "as is, where is" basis.

The State Dept. says the Schloemann-designed press was built at Dusseldorf and was purchased in 1944 by Vereinigte Leichtmetallwerke but was never installed.

The equipment, seized by the State Dept. as reparations, will be sold for cash (U. S. dollars). Sealed bids will be opened at 10 a.m. (EDT) October 10. Bid forms are available at Surplus Property Staff, Department of State, Annex No. 7, 21st and C Streets, N.W., Washington, D. C.

BISF Estimates Mechanical Engineering Biggest Steel User

London—Britain's biggest steel consumer is the mechanical engineering industry, while building and constructional engineering is a rearguard second, and motors, cycles, and aircraft is third, discloses an analysis of estimated steel consumption published by the British Iron and Steel Federation.

The BISF conducted the survey as an essential preliminary for its steel industry development plan to provide the capacity needed for

estimated demand in 1960. The report noted that steel consumption per capita rose from 326 lb in 1924 to 624 lb for 1949.

Leaders and Laggards

Mechanical engineering is now using two and two-thirds its 1935 requirements and electrical engineering more than three times as much. The motor industry also shows a substantial advance while the increase in ship building is over the average. Lagging are building and constructional engineering, railways, hardware and hollowware.

Wartime arrears of maintenance and replacement, a clamoring post-war demand, and the resultant drive to raise productive capacity accounts for the increase in steel used by the mechanical engineering field.

Canco to Expand St. Paul Plant

St. Paul—Can manufacturing facilities at its plant here will be expanded by the American Can Co. A one-story steel and brick building to house new manufacturing lines on 75,000 sq ft of floor space will be built at a cost of over \$1 million. Each of the lines will have a 400 containers per min capacity.

Offers to Build Factory

Nashua, N. H.—Inducement to a qualified manufacturer to locate in this community is offered in the Nashua-New Hampshire Foundation's proposition to spend \$1 million on a modern, one-story plant containing up to 200,000 sq ft of space. The Foundation has been circularizing out-of-territory firms.

To Start New Pipe Plant

Anniston, Ala.—Incorporation papers for the Dixie Pipe & Foundry Co. have been filed at the Calhoun County Probate Court here. The new company will establish a pipe plant in St. Clair County. Stockholders of the Dixie Co. are also stockholders in the Peerless Pipe & Foundry Co.

AISE to Feature Tungsten Carbide Rolls

Speaker to present paper explaining benefits of rolls for cold rolling at Cleveland meeting of AISE . . . Numerous technical papers on other phases of technology scheduled.

Pittsburgh—More than 50 plants are now using tungsten carbide rolls on 2-high, 3-high, 4-high and cluster type mills for the cold rolling of steel and non-ferrous metals, according to R. T. Beeghly, vice-president and general manager of Metal Carbides Corp., Youngstown, Ohio.

Mr. Beeghly will deliver a paper

rolled steel; edges of steel punches and dies last twice as long when stamping carbide rolled steel; the combination of a 750,000 psi compressive strength and extremely hard structure gives carbide rolls long life, outlasting steel rolls 50 times on low carbon steel and 25 times on alloys and stainless.

Rolling mill manufacturers, Mr. Beeghly said, are now building mills to accommodate carbide rolls.

Self-Centering Rolls

Pittsburgh—A paper by E. T. Lorig, chief of the senior staff engineering bureau, Carnegie-Illinois Steel Corp., Pittsburgh, on horizontal self-centering rolls may prove to be the most important presented before the 1950 Iron and Steel Exposition at Cleveland Sept. 26-29.

on this subject before the annual convention of the Assn. of Iron and Steel Engineers, at Cleveland Sept. 26-29.

Solid carbide rolls, he said, are used for rolling strip wider than ½ in. Nickel steel arbors with carbide sleeves are used for rolling flat or shape wire, metal tinsel and ribbon. Sleeve-type rolls are water cooled internally. The low thermal expansion properties of carbide rolls make it possible to roll flat and shape wire to tolerances of 0.0001 in.

Advantages Listed

The author pointed to these advantages of carbide rolls: A 95,000,000 psi modulus of elasticity value, three times that of steel rolls, makes possible production of a bright finish strip having twice the flatness and smoothness of steel rolled strip; only 1/3 to ½ the normal amount of tin, copper or other plating material is required to plate carbide

Lightning Safety

V. E. Schlossberg, superintendent of the electric power and steam departments, Inland Steel Co., will deliver a paper describing measures taken by his company to lightning-proof its power system.

A. C. Croft, president, National Foremen's Institute, Inc., New London, Conn., will discuss "Supervisory Development."

"The Preventive Maintenance of Overhead Cranes" will be discussed in a paper by H. C. Mullins, assistant superintendent of maintenance, Electric Division, Jones & Laughlin Steel Corp.

C. W. Stahl, Bethlehem Steel Co., will deliver a paper on "Density Control of Coal Charged in Coke Ovens."

C. R. Montgomery, chief chemist, By-Product Coke Div., Pittsburgh Steel Co., will discuss the satisfactory substitution of fuel oil for special oils in light-oil-recovery from coke oven gas.

Modern methods in the cold-drawing of steel, with particular emphasis on the importance of lubricants, will be the subject of a paper prepared by Walter A. Smigel, general manager, and H. Grey Verner, director of research, R. H. Miller Co., Inc., Homer, N. Y.

Walter Siegerist, president, The



The HALLOWELL WORK BENCH of STEEL

Standardized, ready-made HALLOWELL Work Benches save trouble and expense of "building your own"; provide superior equipment for maximum productivity.

Interchangeable units readily adaptable to individual requirement. Easily bolted together to form continuous bench, yet may be taken down and reassembled as single units. Rigid, heavy-duty construction eliminates bolting to the floor, minimizes installation and maintenance.

HALLOWELL Work Benches do credit to any plant. Functional design and attractive appearance encourage better plant housekeeping and worker performance.

Full details in Bulletin 701.

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AND YOU WILL
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• News of Industry •

Medart Co., will discuss "Centerless Turning of Bars, Billets, and Tubes."

Other Papers Scheduled

Other papers scheduled for delivery:

"Graphite as a Lubricant"—E. S. Glauch, Joseph Dixon Crucible Co.

"Temper Rolling with Modern Control"—J. F. Sellers, Allis-Chalmers Manufacturing Co.

The need for, and the best methods of securing statistical analysis of openhearth data—W. R. Weaver, Republic Steel Corp.

"Acceleration Characteristics of Tandem Cold Reduction Mills"—W. R. Harris and R. W. Moore, industry engineering department, Westinghouse Electric Corp.

"The Continuous Seamless Pipe Mill"—John L. Young, vice-president, engineering, National Tube Co., Pittsburgh.

"What to Look for in Hydraulic Fluids"—Anthony J. Zino, Jr., assistant sales manager, Industrial Div., Swan-Finch Oil Corp., New York.

The selection and application of gears for rolling mill equipment—Edward C. Denne, Pittsburgh, consultant and manager of Gear Dept., United Engineering and Foundry Co.

"Requirements for a Modern Steel Mill Distribution System"—F. H. Wickline, construction electrical engineer, National Tube Co., Lorain, Ohio.

"Economics of a 500-ton Openhearth Furnace"—Walter W. Kompart, Weirton Steel Co.

Use of oxygen for openhearth steel production and the methods of oxygen storage and distribution for this purpose—R. Tietig, Jr., and B. P. Sarasin, of A. J. Boynton & Co.

"The Public Demands Better Combustion"—L. T. White, director of business research, Cities Service Oil Co., New York.

The use of low inertia d-c motors for rolling mill drives—J. Henry Schneider, Section Engineer, D-C Machine Div., Elliott Co., Ridgway, Pa.

Budd's Gary Plant Begins to Roll

Gary, Ind.—Initial production of body components for Studebaker and Nash at The Budd Co.'s new \$7 million automobile plant here began this week. A gradual speeding up will lead to full production by October.

On a 137-acre site, the plant covers some 293,000 sq ft and was completed according to the timetable after its construction started last February. Edward G. Budd, Jr., president, reported that a skeleton crew of personnel from other Budd plants started the first wheels rolling but that further employment of 1000 would be from local sources. Edwin F. Bates is plant manager, assisted by I. A. Hedges.

Test Rolls Titanium Sheets

Sharon, Pa.—Results of preliminary test rolling of titanium sheets by the Niles Rolling Mill Co., subsidiary of Sharon Steel Corp., were so encouraging that further operations with the metal may be carried out at Sharon's Farrell, Pa., plant and at another subsidiary, Brainard Steel Co., Warren, Ohio. Sharon is ready to produce titanium sheets on a commercial basis and may eventually make its own ingots.

Sharon Steel officials were delighted with the outcome of the test rollings, which were successfully concluded less than 10 days after receipt of titanium ingots from the du Pont Co.

U. S. Steel to Mine More Coal

Pittsburgh—One 4000-ton-a-day coal mine, closed for 22 years, will be reopened in Fayette County, Pa., and a new mine of similar capacity will be opened in Washington County, Pa., by the H. C. Frick Coke Co., a U. S. Steel Corp. subsidiary. The former is expected to start producing in about a year and the latter early in 1952.

All coal mined at the Fayette County mine will be coked in nearby beehive ovens and coal from the new mine will go to the Clairton byproduct ovens of Carnegie-Illinois Steel Corp.

COULD ANYTHING BE MORE CONVINCING THAN YOUR OWN EXPERIENCE?

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STEEL CHAIN

HERC-ALLOY is America's **first alloy** steel chain. For slings or other applications HERC-ALLOY Chain will prove that efficiency, safety and economy can go hand-in-hand.

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Other Factories at Angola, New York, St. Catharines, Ontario and Johannesburg, S. A.



THE WEBB
Towveyor

Expedites Warehouse Handling Reaches All Areas . . . FASTER and BETTER

Webb Towveyor systems always effect important savings in time and sharply reduce stock handling costs. In some cases 4/5 the manual effort is eliminated—similar savings in time plus greatly expedited warehousing operations give solid evidence of Webb Towveyor efficiency.

This modern method of handling stock consists of a continuous chain conveyor which moves in a steel slot below the floor. A simple towing pin, attached to the shop truck, is dropped to engage the moving chain.

The "main line" is looped throughout the building. Convenient "sidings" may be provided to reach all areas. Disengaged trucks are wheeled to any point for loading or unloading.

These are but a few of the many features which appeal strongly to management having stock handling problems. May we send complete data—just ask for bulletin No. 1217.



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DALLAS 4 • GRAND RAPIDS 7 • MILWAUKEE 11
MINNEAPOLIS 15 • NEW YORK 16 • PHILADELPHIA
PITTSBURGH 16 • ST. LOUIS 7 • SAN FRANCISCO 3

MANUFACTURERS OF OVERHEAD AND FLOOR TYPE CONVEYORS

• News of Industry •

FTC Gives Sales Ruling Against Valley Steel Products

Washington — A Federal Trade Commission examiner has ordered a warehouse of steel pipe and tubing to stop offering for sale products it does not carry in stock.

The initial decision, which still is subject to appeal, prohibits the Valley Steel Products Co., of St. Louis, from misrepresenting the availability and specifications of steel pipe and tubing.

Listing NE Defense Contracts

Boston—New England manufacturers were awarded a total of \$11,430,253 of defense contracts during the period July 19 to Aug. 16, according to the New England Council. The Council has prepared a detailed listing of contracts which gives the name of the manufacturer, his location, product to be supplied and dollar volume of the order.

Some of the larger orders were for life preservers, high explosives, wire, radar equipment, shelters, parts and overhaul kits for turbo-jet engines, and titanium alloy blades for airplanes.

Wins Ore Tipple Contract

Mobile, Ala.—A low bid of \$702,162 for construction of a new iron ore tipple at the Alabama State Docks here was submitted by the Link Belt Co., Chicago. The port of Mobile is handling cargoes of ore from South America and Sweden and the new plant will raise the capacity of bulk-handling by one-third.

Harvester to Make Army Vehicles

Melrose Park, Ill.—The department of defense has asked the International Harvester Co. to manufacture an army ordnance armored vehicle of the track-laying type, according to a recent announcement by H. T. Reishus, general manager of the company's industrial power division.

War Control Powers Over Industry Given to Government

Washington—Far-reaching power to control U. S. industry is now —2½ months after the outbreak of war—in the hands of government officials.

But the agencies designated by President Truman to administer the new war controls—principally the Commerce Dept.—admitted early this week they had still not “finalized” their ideas on how much control medicine should be administered.

Here in brief are the powers contained in the defense production law:

(1) Allocations, priorities and inventory controls.

(2) Prices may be controlled, but wages must also be controlled in any industry put under price ceilings.

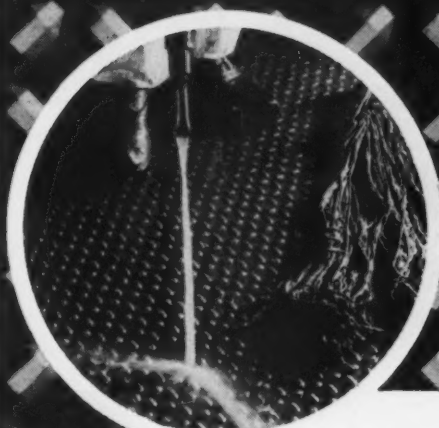
(3) Consumer credit controls and credit controls on new home construction.

(4) The President is empowered to requisition any equipment, supplies or materials necessary for national defense. Buying of raw materials is also authorized.

(5) A \$600 million revolving fund is available for production loans and guarantees. The President can ask Congress for an additional \$1400 million for this purpose.

(6) Authority to settle labor disputes by setting up an agency similar to the old War Labor Board is also in the new law.

The basic power to issue priorities and to allocate material, equipment and facilities runs until June 30, 1952. Other new powers, such as price and wage control and restrictions on credit, will expire on June 30, 1951. But the power to allocate and assign priorities cannot be exercised with respect to contracts entered into after June 30, 1951. The powers can only be continued for another year on contracts entered into between now and June 30 next year. The government's authority to make and guarantee loans for plant expansion extends to June 30, 1952.



U·S·S MULTIGRIP FLOOR PLATE

- easy to clean • permanent
- attractive in appearance
- SAFE... wet or dry!

U·S·S Multigrip Floor Plate not only protects workers and vehicles from costly slips and spills, but also forms an installation that is attractive in appearance, easy and economical to maintain.

Multigrip's flat-topped, angular-edged risers are so spaced that there are no pockets in which dirt and water can accumulate. All side faces of the risers are sloping so that dirt can be brushed or hosed away from, and past, the risers with ease. Drainage is complete and immediate in any direction.

For safe, permanent, easy-to-clean flooring use non-skid Multigrip Floor Plate.

Get further information about Multigrip from your nearest steel warehouse or write to us direct.

Carnegie-Illinois Steel Corporation, Pittsburgh
Columbia Steel Company, San Francisco
Tennessee Coal, Iron & Railroad Company, Birmingham
United States Steel Supply Company,
Warehouse Distributors, Coast-to-Coast
United States Steel Export Company, New York



MULTIGRIP FLOOR PLATE

UNITED STATES STEEL



KEYSTONE
"SPECIAL PROCESSED"
COLD HEADING WIRE

EXCELLENT FLOW PROPERTIES
PROLONGS DIE LIFE
FEWER REJECTIONS
REDUCES INSPECTIONS

To attain true economy in the production of Phillips head and clutch head screws, an ever increasing number of manufacturers are specifying Keystone's new "special processed" cold heading wire.

This new wire delivers the desired upsetting and die forming qualities with a high degree of uniformity due to its excellent flow properties. Production reports show that die and plug life are often more than doubled . . . finished product rejections are minimized . . . the cost of expensive final inspections is reduced. The superior plating qualities of "special processed" wire further assure a better finished product.

Whatever your industrial wire problems might be, Keystone metallurgical research and testing facilities are available to supply the answers.

KEYSTONE
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*Special Analysis Wire, Setting
New Standards of Performance*

• **News of Industry** •



**STEEL
CONSTRUCTION
NEWS**

Fabricated steel awards this week included the following:

- 7795 Tons, Rochester, Minn., diagnostic unit at Mayo Clinic to Allied Structural Steel Co., Chicago.
- 1700 Tons, Appleton, Wis., general office building for Aid to Lutherans, to American Bridge Co.
- 1360 Tons, Trenton, Nebr., Bureau of Reclamation purchaser C B and Q relocations Spec. 3113 to American Bridge Co.
- 700 Tons, Denver, Public Service Co. of Colorado, transmission towers, to American Bridge Co.
- 640 Tons, Beloit, Wis., new boiler plant for Fairbanks Morse Co. through Stone and Webster Engineering Corp. to Mississippi Valley Structural Steel Co., St. Louis.
- 600 Tons, Decatur, Ill., YMCA building to Mississippi Valley Structural Steel Co., Decatur, Ill.
- 595 Tons, Marathon County, Wis., project T-O-O-1/ to Wausau Iron Works, Wausau, Wis.
- 406 Tons, Adams, Mass., bituminous macadam, Henley Lundgren Co., Shrewsbury, low bidder.
- 270 Tons, Chicago, building for Kux Machine Co. to Henry E. Grempe Co., Chicago.
- 250 Tons, Grand Junction, Colo., power house to Burkhardt Steel and Iron Works, Denver.
- 250 Tons, Green Bay, Wis., St. Peter and Paul School, to Worden Allen Co., Milwaukee.
- 240 Tons, Two Rivers, Wis., warehouse for Aluminum Goods Mfg. Co., to Milwaukee Bridge Co., Milwaukee.
- 235 Tons, Newton, Iowa, high school building to Pittsburgh Des Moines Steel Co., Des Moines, Ia.
- 190 Tons, Columbia County, Wis., bridge FAG-035-1/9/ and 10/ to Milwaukee Bridge Co., Milwaukee.
- 125 Tons, Champaign, Ill., W. T. Grand Bldg., to Mississippi Valley Structural Steel Co., Decatur, Ill.

Fabricated steel inquiries this week included the following:

- 846 Tons, Danvers, Middletown, Topsfield and Boxford, Mass., bituminous concrete and nine bridges.
- 120 Tons, Darien, Conn., reinforced concrete pavement and single span rolled beam bridge on relocation of U. S. Route 1 (New Haven to New York). E. T. Nettleton, New Haven, district engineer.

Reinforcing bar awards this week included the following:

- 200 Tons, Boston, Mass., stock warehouse for Sears Roebuck Co., through Thomas O'Connor to Northern Steel Co., Boston.

Reinforcing bar inquiries this week included the following:

- 304 Tons, Danvers, Middletown, Topsfield and Boxford, Mass., bituminous concrete and nine bridges.
- 209 Tons, Allegheny and Butler Counties, Pa., construction of divided highway. Secretary of Highways, Harrisburg, Pa. Bids due Sept. 15.
- 56 Tons, Huntingdon County, Pa., construction of 2 reinforced structures and 2 bridges. Secretary of Highways, Harrisburg, Pa. Bids due Sept. 15.

Plant Protection

Continued from Page 123

must be watched constantly. The term covers security of information, prevention of sabotage and combatting subversion.

Espionage can be checked as it was by the same type of plant security measures used during World

Spies Want to Know

Capacity, rate of production, industrial mobilization schedules, and details of orders on hand.

Specifications of munitions produced.

Test records of new equipment.

Sources of raw materials and components.

Destination of completed units and transportation routes.

Data on production methods.

Critical points and possible methods of effective sabotage.

Security and anti-sabotage measures, such as frequency of inspections by guards and their dependability.

Dissatisfied labor elements that might be used in subversive plans.

War II: Loyalty checks of employees, prevention of unauthorized entry, special handling of classified material and restriction of movement within the plant.

For physical protection against sabotage the booklet suggests: Fencing; electronic devices; a minimum number of entrances; screening of vulnerable windows; walls and protection around key machines. Overall, guards will be the principal means of enforcement of these measures.

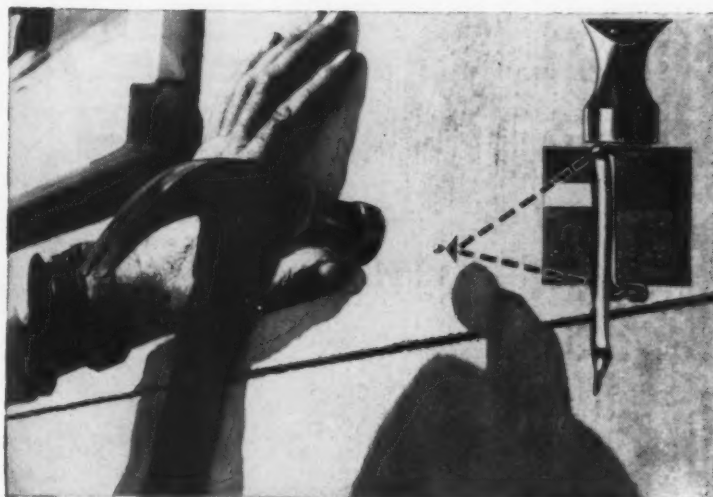
Resume Your Reading on Page 124

Orders 1000 Steel Box Cars

Birmingham—A \$5 million order for 1000 steel box cars was received by the Pullman-Standard Car Mfg. Co. from the Southern Pacific Railroad. This is in addition to an order for 2000 box cars placed by the road earlier this year. The cars will be manufactured in Pullman-Standard's Bessemer plant here.



the amazing new self-locking fastener



This picture illustrates how the self-clinching face nail attaches asbestos shingles to gypsum and insulation sheathing. Inset shows, in cross section, the self-clinching principle. The fastener head is flattened, which in turn, by automatic action, causes the locking foot to be drawn up behind the sheathing.

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ELASTIC STOP NUT CORPORATION OF AMERICA

MADE OF *MicroRold*® STAINLESS STEEL STRIP

Production of these stainless steel nails exceeds 600,000 per day — enough to take care of 250 houses.

MicroRold Stainless Steel Strip, cold reduced on the Sendzimir Mill, was selected for material because of its many advantages, which are not obtained by conventional rolling methods. These include accuracy of gauge and dimensions, excellency of surface conditions, reduced die wear, less rejects, and many others.

The economies of using MicroRold have been proved and new case histories are being developed every day. Let your distributor give you full details and demonstrate how it can save you money.

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one of the famous "Mile of Light" Flashlights. Nickel plated brass, lacquered, perfect parabolic reflector gives a strong beam of pre-focused light. 3-way "ON-OFF" and signaling switch always works. Transparent or lustrous colored case.



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Highest quality carbon steel blade, safelocks in 3 positions. Unbreakable plastic handles in six lustrous colors.

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Razor blade with a safety handle. Refillable. Assorted lustrous colors.

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Transparent, with off-set magnifying handle. Endurably sharp edges.

PAR-KIT No. 377
Ingenious combination of wind shield ice scraper, key chain and coin holder. Holds 2 nickels and 2 pennies—always ready for parking meter.

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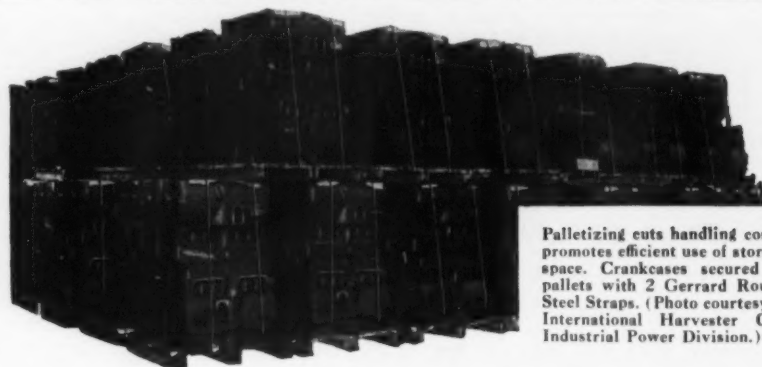
☐ Plain ☐ quantity. ☐ With imprint

- ☐ "Plastic Eye" Flashlight
- ☐ "Plastic Eye Jr." Flashlight
- ☐ "Super Right Angle" Flashlight
- ☐ "One-Hand" Knife
- ☐ Razor-Nife and Key Chain
- ☐ Letter Opener
- ☐ Nail File
- ☐ Thimble
- ☐ Stir Stix

- ☐ Bracelet Key Holder
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☐ The items you illustrate do not fully satisfy my needs, so please send me your complete catalog and full information. (PLEASE PRINT)

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COMPANY _____
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Palletizing cuts handling costs, promotes efficient use of storage space. Crankcases secured to pallets with 2 Gerrard Round Steel Straps. (Photo courtesy of International Harvester Co., Industrial Power Division.)

Tie it tight...that means GERRARD!

Tight as tight can be . . . that's the kind of tie you get when you use the Gerrard method of strapping. Gerrard Steel Strapping is *round* . . . that's why it clinches evenly at the corners and distributes the stress evenly through its diameter. Danger of breakage . . . and damage claims, too . . . are sharply reduced. Individual packages and palletized units remain firm from plant to destination.

Gerrard Machines and Strapping, in a wide range

of sizes, can be used to tie small parcel post packages, heavy pallets or carload lots of steel pipe, plate and tinplate.

And Gerrard Round Steel Strapping costs about 40% less than any other metal reinforcement.

Write for a free copy of *Blue Book of Packaging*. And consult a Gerrard engineer about your packaging problems. His services are available free of charge. **Gerrard Steel Strapping Company, 4705 South Richmond Street, Chicago 32, Illinois.**



GERRARD ROUND STEEL STRAPPING

UNITED STATES STEEL

• News of Industry •

Dates to Remember



Sept. 5-9—National Chemical Exposition, Chicago, Coliseum, Chicago. American Chemical Society, Chicago Section headquarters are at 86 E. Randolph St., Chicago.

Sept. 12-14—Society of Automotive Engineers, tractor meeting, Hotel Schroeder, Milwaukee. Society headquarters are at 29 W. 39th St., New York.

Sept. 13-15—National Petroleum Assn., annual meeting, Hotel Traymore, Atlantic City, N. J. Association headquarters are in the Munsey Bldg., Washington.

Sept. 18-22—Instrument Society of America, conference and exhibit, Memorial Auditorium, Buffalo. Society headquarters are at 921 Ridge Ave., Pittsburgh.

Sept. 19-21—American Society of Mechanical Engineers, fall meeting, Hotel Sheraton, Worcester. Society headquarters are at 29 W. 39th St., New York.

Sept. 23-26—Packaging Machinery Manufacturers Institute, annual meeting, Homestead, Hot Springs, Va. Institute headquarters are at 342 Madison Ave., New York.

Sept. 26-29—Assn. of Iron & Steel Engineers, exposition and annual convention, Public Auditorium, Cleveland. Association headquarters are in the Empire Bldg., Pittsburgh.

Sept. 27-29—National Metals Trades Assn., annual convention, Hotel Commodore, New York. Association headquarters are at 122 S. Michigan Ave., Chicago.

Sept. 27-30—Society of Automotive Engineers, aeronautics meeting and engineering display, Biltmore Hotel, Los Angeles. Society headquarters are at 29 W. 39th St., New York.

Oct. 6-8—National Assn. of Waste Material Dealers, fall meeting, Hotel Traymore, Atlantic City, N. J. Association headquarters are in the Times Bldg., New York.

Oct. 10-12—Society of Industrial Packaging & Materials Handling Engineers, exposition, Convention Hall, Philadelphia. Society headquarters are at 20 W. Jackson Blvd., Chicago.

Oct. 12-13—Gray Iron Founders' Society, annual meeting, Netherlands Plaza Hotel, Cincinnati. Society headquarters are at 210 National City-E. 6th Bldg., Cleveland.

Oct. 16-18—Society of Automotive Engineers, transportation meeting, Hotel Statler, New York. Society headquarters are at 29 W. 39th St., New York.

Oct. 23-25—American Gear Manufacturers Assn., semiannual meeting, Edgewater Beach Hotel, Chicago. Association headquarters are in the Empire Bldg., Pittsburgh.

Oct. 23-26—American Institute of Steel Construction, annual meeting, Shamrock Hotel, Houston. Institute headquarters are at 101 Park Ave., New York.

Oct. 23-27—National Metal Congress & Exposition, International Amphitheater, Chicago. American Society for Metals headquarters are at 7301 Euclid Ave., Cleveland.

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COMPLETELY NEW WAREHOUSE FACILITIES
FOR QUICK AND EFFICIENT SERVICE

Suited to the needs of Eastern Manufacturers

Regardless of your location in the East you will find this "all new" warehouse for Stainless, Aluminum and Steel flat rolled products strategically located in the metropolitan New York area for quick servicing of your requirements. You'll also find an experienced and cooperative organization; not interested in just "selling" you but truly desirous of "servicing" your regular and unusual needs. Facilities include coil slitters and cutting to length equipment . . . widths up to 36" . . . thicknesses .001" and heavier.

Your inquiry will be welcome today
—and tomorrow.



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IN FLAT ROLLED METAL PRODUCTS**

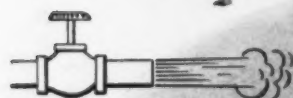
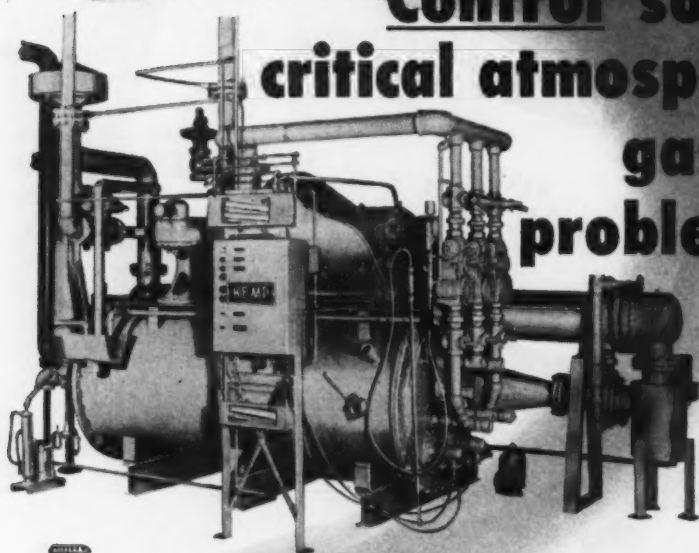
750 BOULEVARD, KENILWORTH, NEW JERSEY
Telephone: N.Y. COrtlandt 7-2427, N.J. UHiomville 2-6900



WHAT IS YOUR NEED?
WRITE US YOUR REQUIREMENTS
NOW — PERHAPS WE CAN HELP
YOU. AS OUR STOCKS GROW WE
WILL ADVISE YOU AVAILABILITY.

NOW!

Constant Control solves critical atmosphere gas problems!



KEMP ATMOSPHERE GENERATORS

END MIXTURE PROBLEMS. PRODUCE SAME ANALYSIS GAS REGARDLESS OF DEMAND . . . HAVE EXCLUSIVE SINGLE AIR-GAS CONTROL!

You need the correct protective atmospheres for heat-treating operations! Here's how Kemp Atmosphere Generators solve your problems once and for all! *One single knob* sets the air-gas mixture accurately, permanently. No matter what the demand, you get the same analysis inert gas from 1% to 100% of capacity. With Kemp there is no need for tinkering!

ABSOLUTELY DEPENDABLE

Kemp Generators burn ordinary gas just as it comes from the mains. A famous Kemp Carburetor, part of each installation, assures complete combustion . . . producing a clean, chemically

inert gas containing 88% nitrogen, 12% CO₂ . . . a gas so pure it is used without further processing in the manufacture of aspirin and laboratory chemicals, fine paints and a host of other products.

SEND FOR PROOF!

Whether you need special atmospheres for purging, fire protection, blanketing or any steel process . . . specify Kemp. For technical information write for special bulletin. To find out how much you can benefit: tell us how you produce inerts now; we'll show you how Kemp can solve your problem! Mail coupon today!

KEMP OF BALTIMORE ATMOSPHERE GAS GENERATORS

CARBURETORS
BURNERS
FIRE CHECKS
ATMOSPHERE GENERATORS
ADSORPTIVE DRYERS
METAL MELTING UNITS
SINGING EQUIPMENT
SPECIAL EQUIPMENT

THE C. M. KEMP MFG. CO., Dept. C-2
405 E. Oliver St., Baltimore 2, Md.

Gentlemen: Send me information. Also, show me how much we can save on inerts. We now spend . . . per mcf for inerts used in . . . (process.)

Name
Company
Address
City Zone State

FREE

PUBLICATIONS

Continued from Page 36

with simplified tabulations of dimensions so that proper cylinders can be found with a minimum of time and effort. *Hydro-Line Mfg. Co.*

For free copy insert No. 8 on postcard, p. 37.

V-Belt Catalog

Do's and don'ts for better transmission efficiency and longer belt life, and other useful information, are contained in a new 40-p. industrial V-belt catalog. Included are engineering data and drive selections for general duty and multiple V-belts in widths from A to E, complete with calculations, comparison charts and correction factors. *Industrial Sales Div., Durkee-Atwood Co.*

For free copy insert No. 9 on postcard, p. 37.

Humidity Testing

Information on the performance, construction and specifications of Bowser relative humidity test chambers, available in standard sizes of 10, 20 and 30 cu ft capacity, is presented in a new 4-p. bulletin. The bulletin tells how these completely self-contained units, which are mechanically refrigerated, will automatically maintain humidity conditions from 20 to 95 pct between 35° and 1750°F. *Refrigeration Div., Bowser, Inc.*

For free copy insert No. 10 on postcard, p. 37.

Retaining Rings

The complete line of Waldes Truarc retaining rings are described in a new 8-p. catalog. Rings are grouped according to basic use. Data is given for each ring, together with 42 drawings of typical cost-saving applications. New special-type rings, fixtures, assembly tools and application pliers are shown, and information is also included on materials, finishes, and technical service for manufacturers. *Waldes Kohinoor, Inc.*

For free copy insert No. 11 on postcard, p. 37.

Turn to Page 140

Not Enough Slices

IN THE LOAF



Frankly, we can't supply all the steel our customers need. World conditions and booming industry have outstripped all previous steel demands upon us. But the "loaf" is just so big even though production continues at peak levels.

You can depend on us to produce and deliver our commitments. But we may not always be able to give you all the steel you need at the time

you need it. You can be sure we will do our very best to serve you. And you can depend on the continued high quality of our product—quality that is the mark of Wisconsin Steel.

We sincerely hope our customers will bear with us in these periods of shortages. Right now, there just aren't enough "slices in the loaf" to satisfy all the increased appetites.



**WISCONSIN STEEL COMPANY, Affiliate of
INTERNATIONAL HARVESTER COMPANY**
180 North Michigan Avenue • Chicago 1, Illinois

WISCONSIN STEEL

September 7, 1950

139



Bronze cooling drums, used in making imitation leather. Each drum is double cylinder, with brazed-in bronze spacers and beads. Journals are steel. Coolant is circulated between cylinders by means of flexible hose from journal.

TOUGH...COMPLEX...OR SIMPLE JOB

Shenango qualities pay off!

FOR example, take the rather complex cooling drums shown here. Each drum consists of one cylinder within another, both centrifugally cast by Shenango's advanced technique. This in itself means exceptional strength to resist stresses and pressure... and fine, pressure-dense grain for avoidance of porosity and prolonged wear-life. It also means relief from sand inclusions, blow holes and other often-hidden defects.

Add to this Shenango's complete, modern machining facilities and you'll appreciate how simple parts or complex assemblies can be precision finished here to your exact specifications... at minimum cost!

FOR FREE BULLETINS, for specific data on ferrous or non-ferrous work, large or small, semi or finish machined, write to:

SHENANGO-PENN MOLD COMPANY
589 West Third St. • Dover, Ohio

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ALL RED BRONZES • MANGANESE BRONZES • ALUMINUM BRONZES
MONEL METAL • NI-RESIST • MEEHANITE® METAL

FREE PUBLICATIONS

Continued

Stud Welding Info

A new 16-p. illustrated booklet reprints the chapter on stud welding from the AWS Welding Handbook. The article explains the stud welding method of fastening, describes the equipment and its principal uses, and gives stud locating procedures and other data. *Nelson Stud Welding Div., Morton Gregory Corp.*

For free copy insert No. 12 on postcard, p. 37.

Clean, Cool, Dry Air

How the Adams pipe line After-cooler and Cyclone Separator cools air to within 10°F of the cooling water is explained in a new 8-p. bulletin. The booklet tells how the equipment removes water, oil and pipe scale from compressed air systems to attain longer life of pipe lines and compressed air tools. Colorful cutaway drawings show operation of the equipment. *R. P. Adams Co., Inc.*

For free copy insert No. 13 on postcard, p. 37.

Card Index System

A new illustrated folder describes the Triple Check automatic card indexing systems for use with name and index files. This card guiding system provides an automatic numeric keyboard which facilitates filing of card records behind primary index guides, with an added check provided by a sequence of three color bands which are repeated in each section of the file. *Management Controls Div., Remington Rand, Inc.*

For free copy insert No. 14 on postcard, p. 37.

Modern Welding, Cutting

A new 64-p. catalog of welding and cutting equipment and supplies and safety equipment illustrates and describes in detail all the modern and efficient Burdett equipment used in the welding field today. The new catalog describes not only the actual equipment required for every type of welding and cutting job, but also covers protective equipment such as goggles, helmets and gloves. *Burdett Oxygen Co.*

For free copy insert No. 40 on postcard, p. 37.

Resume Your Reading on Page 37

Fast Acting Fire Watchman



on duty 24 hours a day...

AT EACH FIRE HAZARD POINT

Let C-O-TWO safeguard your property from fire, even if you have a night watchman on duty. With a C-O-TWO Combination Smoke Detecting and Fire Extinguishing System you have an automatic, round-the-clock fire watchman that simultaneously guards each fire hazard point. The first trace of smoke in a protected area is drawn through pipes to a smoke detector. Immediately an alarm sounds . . . then fast, clean carbon dioxide gas fully floods the stricken area . . . the fire is out before it has a chance to spread and cause extensive damage.

Actual fire tests made by the Underwriters' Laboratories, Inc. show that fire detection with this type of smoke detecting equipment is much quicker than other methods . . . because usually there is smoke or smoldering before flames break out.

There is no water damage, no lingering odors with carbon dioxide . . . only damage is that actually caused by the fire itself. Carbon dioxide is clean, dry, non-conducting and non-damaging . . . harmless to finishes, materials and equipment. The fire is out in seconds, with hardly any interruption or commotion.

Remember fire doesn't wait . . . let an expert C-O-TWO Fire Protection Engineer advise you on your fire protection needs now, before fire strikes. Write today for complete free information!



C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK 1 • NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada

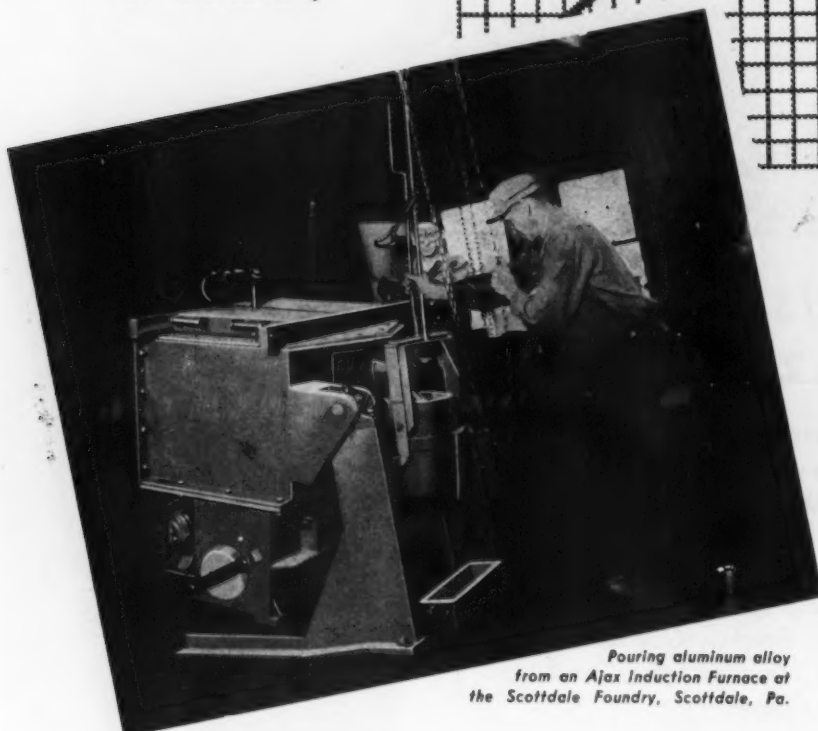
AFFILIATED WITH PYRENE MANUFACTURING COMPANY



September 7, 1950

AJAX INDUCTION FURNACES

ARE KEPT BUSY PROVIDING
ALUMINUM FOR **MILLIONS**
OF CASTINGS!



Pouring aluminum alloy
from an Ajax Induction Furnace at
the Scottdale Foundry, Scottdale, Pa.

SUBSTANTIAL SAVINGS IN TIME, LABOR, METAL, AND
FLOOR SPACE, PLUS HIGH COUNT OF PERFECT CAST-
INGS WITH AJAX ELECTRIC INDUCTION FURNACES

- No flux needed—no mechanical stirring—no segregation occurs, because metal is in constant circulation.
- Costs less than conventional combustion firing—avoids overheating as temperature control is completely automatic.
- Low upkeep—linings average two years of service—almost no down time—lower melting losses.
- Temperature held within $\pm 5^\circ\text{F}$ —metal kept at lowest feasible casting temperature—no danger of overheating.
- Harmful impurities removed—less dross—no iron pickup—iron impurities adhere magnetically to passage walls.
- High yield of perfect castings—a remarkably low scrap loss, that is possible only with induction furnaces.
- No fumes—almost noiseless operation—cooler shops—lower installation and maintenance costs.
- Automatic electric controls require a minimum of attention—less labor than for fired furnaces.
- Requires 30% to 40% less floor space than any other type of induction furnace—heavy steel construction for long life.

AJAX ENGINEERING CORPORATION, Trenton 7, N. J.

AJAX
TAMA-WYATT



INDUCTION MELTING FURNACE

AJAX ELECTRO METALLURGICAL CORP., and Associated Companies
AJAX ELECTROTHERMIC CORP., Ajax Refractory High Frequency Induction Furnaces
AJAX ELECTRIC CO., INC., The Ajax-Hulligan Electric Salt Bath Furnaces
AJAX ELECTRIC FURNACE CORP., Ajax Wyatt Induction Furnaces for Melting

NEW

PRODUCTION IDEAS

Continued from Page 40

wire with welding currents up to 600 amp that produce extremely high current densities. These create a deeply penetrating arc that in turn allows the use of high welding speeds. Little or no edge preparation of joints is required, and therefore less weld metal is used in completely fusing the joint. The process can be used with any



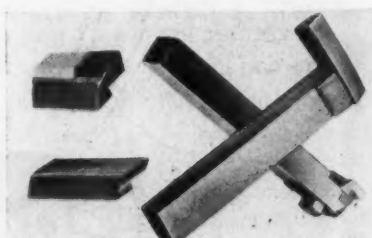
standard Lincoln Electric SAE 600 or SAE 900 welding generator or an SAE 600 gasoline engine-driven generator. A Manual Lincolnweld ML-2 unit for using the Hidentensity process consists of a control case, wire reel case, conductor cable and welding gun. *Lincoln Electric Co.*

For more data insert No. 28 on postcard, p. 37.

Cutting Tools

Lathe and turret lathe turning tools combine blade and holder.

The combination in the new line of cutting tools utilizes a blade in a choice of high speed steel or car-



bide tipped inserted in a holder of heat treated chrome nickel steel. Clamping force is such that the tool is said to become more rigid under increasing cutting pressure. Six models comprise the line for

"no more GAMBLING on tool steel selection"



[1/3 actual size; Selector is in 3 colors]

Here's how it works:

To use the Selector, all you need know is the characteristics that come with the job: type and condition of material to be worked, the number of pieces to be produced, the method of working, and the condition of the equipment to be used.

FOUR STEPS—and you've got the right answer!

1. Move arrow to major class covering application
2. Select sub-group which best fits application
3. Note major tool characteristics (under arrow) and other characteristics in cut-outs for each grade in sub-group
4. Select tool steel indicated

That's all there is to it!

Here's an example:

Application—Deep drawing die for steel

Major Class—Metal Forming—Cold

Sub-Group—Special Purpose

Tool Characteristics—Wear Resistance

Tool Steel—Airdi 150

One turn of the dial does it!

And you're sure you're right!!

Since the first announcement, hundreds of tool steel users have received their CRUCIBLE TOOL STEEL SELECTORS. The comments received indicate that this handy method of picking the right tool steel right from the start is going over big.

"Handiest selector I've ever seen"

"No more gambling on tool steel selection"

"You're right, the application should dictate the choice of the tool steel" ... and many, many more favorable comments.

You'll want your CRUCIBLE TOOL STEEL SELECTOR. It uses the only logical method of tool steel selection—begin with the application to pick the right steel! And the answer you get with one turn of the Selector dial will prove satisfactory in every case, for the CRUCIBLE TOOL STEEL SELECTOR covers 22 tool steels which fit 98% of all Tool Steel applications. ALL the tool steels on the Selector are in Warehouse Stock ... that means when you get the answer, you can get the steel ... fast!

Write for your Selector today! We want you to have it, because we know you've never seen anything that approaches your tool steel problems so simply and logically. Just fill out the coupon and mail. Act now! CRUCIBLE STEEL COMPANY OF AMERICA, Chrysler Building, New York 17, N. Y.

Crucible Steel Company of America
Dept. 1, Chrysler Building
New York 17, N. Y.

Gentlemen:

Sure! I want my CRUCIBLE TOOL STEEL SELECTOR!

Name _____ Title _____

Company _____

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City _____ State _____

CRUCIBLE

first name in special purpose steels

TOOL STEELS

fifty years of Fine steelmaking

Branch Offices and Warehouses: ATLANTA • BALTIMORE • BOSTON • BUFFALO • CHARLOTTE • CHICAGO • CINCINNATI • CLEVELAND • DENVER • DETROIT • HOUSTON, TEXAS • INDIANAPOLIS • LOS ANGELES • MILWAUKEE • NEWARK • NEW HAVEN • NEW YORK • PHILADELPHIA • PITTSBURGH • PROVIDENCE • ROCKFORD • SAN FRANCISCO • SEATTLE • SPRINGFIELD, MASS. • ST. LOUIS • SYRACUSE • TORONTO, ONT. • WASHINGTON, D. C.

September 7, 1950

143

SHARONSTEEL

It's almost magic the way Brainard tubing consistently fabricates just the way you want it to — the way the scrap ratio stays at a minimum — the constant uniformity through and through.

But actually there's no magic to it — Brainard welded mechanical tubing does the trick because it is quality controlled from ore to strip to tube. This means by using Brainard you can build more value into your product.

Next time you want ductile, easier-working tubing, get in touch with one of the Brainard offices listed below. The results will impress you.



**THE
TUBE**
THAT DOES THE TRICK!

QUALITY CONTROLLED FROM
ORE TO PRODUCT BY BRAINARD

Straight or Fabricated

SIZES: 1/2" to 4" — .025 to .165

TUBING DIVISION

BRAINARD STEEL COMPANY

2309 LARCHMONT AVENUE WARREN, OHIO

There are Brainard sales offices in Atlanta, New York, Cincinnati, Pittsburgh, Buffalo, Chicago, Philadelphia, Detroit, Cleveland, Indianapolis and Nashua, N. H. Sales Representatives: Sharonsteel Products Co. in Detroit, Grand Rapids, Mich.; and Farrell, Pa. Fred J. Reynolds, Davenport, Ia; Brass & Copper Sales Co., St. Louis, Mo.

NEW PRODUCTION IDEAS

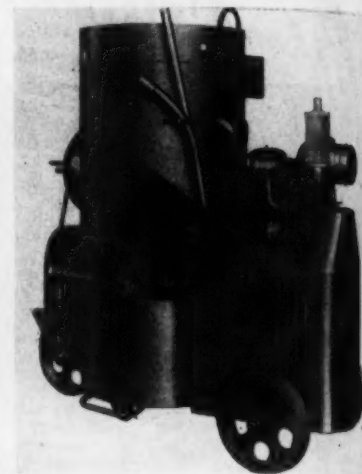
(Continued)

roughing, semi-finishing, finishing and threading. *Bokum Tool Co.*
For more data insert No. 29 on postcard, p. 2.

Vacuum Cleaner

Gasoline powered; two sweeper cleaning; 7 1/2 cu ft dust capacity.

Designated the Hoffco-Vac No. 50 for gasoline operation, the new unit is powered by a four-cycle, single cylinder, air cooled engine rated at 6.8 hp. This heavy duty portable vacuum cleaner provides



two-sweeper capacity for simultaneous cleaning with two 50-ft lines of 1 1/2 in. hose. For single sweeper use, one 75 or 100-ft length of 2-in. hose can be operated with the Hoffco-Vac No. 50. *Air Appliance Div., U. S. Hoffman Machinery Corp.*

For more data insert No. 30 on postcard, p. 2.

Metal Drawing Press

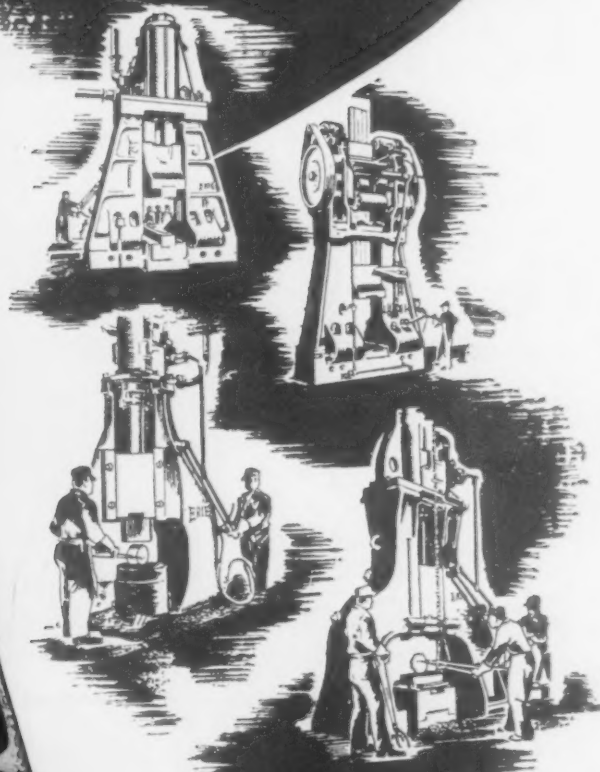
Features short stroke eccentric, increasing production up to 50 pct.

This new Twin-Power mechanical press differs from the conventional mechanical press principle in that the eccentric stroke is less than half of the press stroke and applied only to the lower or work part of the stroke. The first or approach part of the stroke is made independently of the eccentric by means of fluid action. The application of the short stroke eccentric is said to result in an increase in strokes per minutes up to 70 pct. Conventional draw speeds are used or conversely it decreases the draw

Turn to Page 150

You'll GET THE TOP of your HAMMERGANG'S SKILL by using **ERIE HAMMERS**

Steam or Air . . . Board Drop . . . Single and
Double Frame Forging Hammers and Motor-
Driven Pneumatics *Write for Bulletins . . .*



ERIE

ERIE

*All Parts in Erie Hammers
Subject to Impact are **STEEL***
ERIE FOUNDRY COMPANY, ERIE, PA.

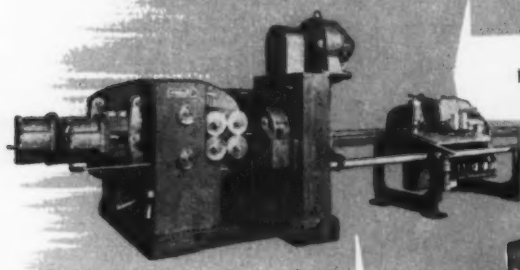
ERIE BUILDS Dependable HAMMERS



Look to Medart for...

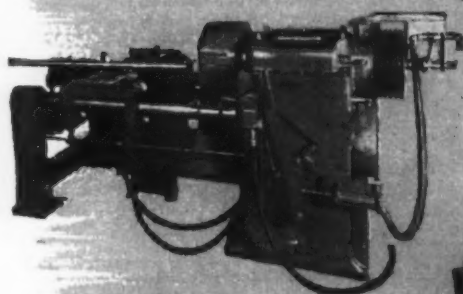
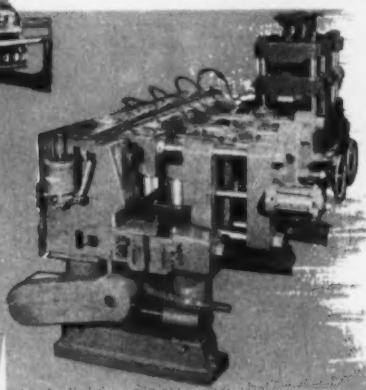
COLD FINISHING MACHINES

Look to Medart... because Medart makes every type: Straightening and Turning Machines... billet peelers... bar centerers... bar pointers, etc. Installations throughout the entire metal industry attest their excellence and many long years of service. Medart cold finishing machines are used for working all types of metals.



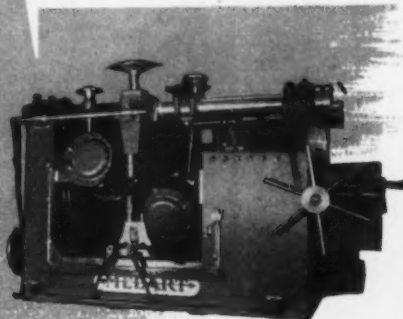
TPVC SHAPE STRAIGHTENER

RFPD CENTERLESS BAR TURNER



No. 9 SIZE MEDART TWO ROLL SINGLE MOTOR ROTARY STRAIGHTENING, SIZING AND POLISHING MACHINE

CENTERLESS AUTOMATIC BAR POINTER



MANUFACTURING ENGINEERS OF COMPLETE TRANSMISSION EQUIPMENT AND SPECIALIZED MACHINERY

MEDART

THE MEDART COMPANY • 3500 DE KALB ST., ST. LOUIS, MO.

NEW PRODUCTION IDEAS

Continued

speed as much as 45 pct if the conventional number of strokes per minute are desired. The short stroke eccentric also provides higher tonnage through the greater portion of the working stroke making it possible to perform many jobs on a lower tonnage press. The



application of fluid action to Twin-Power operation eliminates the conventional screw mechanism for adjusting the slide; provides instantaneous and sensitive slide action in either direction for quick die setup; eliminates die impact and provides positive overload protection. *Hydraulic Press Mfg. Co.* For more data insert No. 31 on postcard, p. 37.

Dry Cooling Equipment

Three models designed primarily for cooling engine jacket water.

Two models are small portable units, a third fills the need for a



medium size unit. The portable units are forced draft and have the same cooling capacity. Model L has fan and tube sections mounted vertically; Model M, illustrated, has them mounted horizontally. There are seven different sizes of each

NEW PRODUCTION IDEAS

Continued

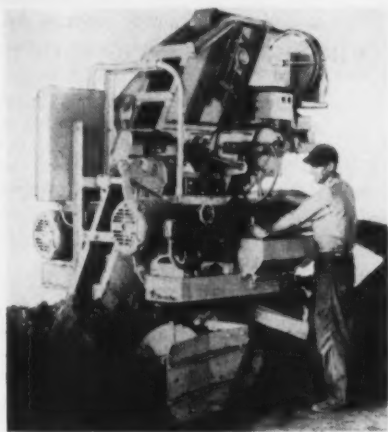
model. Model JJ units are larger in capacity and are forced draft with horizontally mounted sections. Standard sections are made of round copper tubes with pressure bonded aluminum or copper fins, brazed into formed steel pipe headers. They operate up to 150 psi at 300°F. Units are completely fabricated and are piece-marked for easy assembly. They can also be used for cooling natural gas, lube oils, chemical solutions, fluids of refining stages, etc. Marley Co., Inc.

For more data insert No. 32 on postcard, p. 37.

Sand Conditioner

20 improvements provide greater capacity, more efficient operation.

The capacity of the Nite-Gang has been increased from 40 to 50 tons per hr. The newly improved machine self propels, self loads, blends, magnetically separates,



breaks lumps, thoroughly screens, double aerates, and windrows or piles. It travels and loads at variable speeds, leaves a clean, level floor and is easily maneuverable. Beardsley & Piper, Div. Pettibone Mulliken Corp.

For more data insert No. 33 on postcard, p. 37.

Circular Sawing Machine

For square or angular cutting off of ferrous, nonferrous materials.

Fast and accurate square or angular cutting off of ferrous or nonferrous materials up to 3-in. round or square is claimed for the new machine. Angular cutting up to 45° is possible by inserting clamping jaws of the desired angle and moving the supporting stock conveyer, or the machine can be

The **ABC** of **MST**

Michigan

The Modern Electric Resistance

**WELDED
STEEL TUBING**



A ALWAYS
MAKES
POSSIBLE
B BETTER
PRODUCTS
C AT LOWER
COST



ROUND
3/8" to 4" O. D. 9 to 22 gauge
SQUARE-RECTANGULAR
1/2" to 2" 20 gauge 1" to 2 3/4", 14, 16, 18 gauge

Can be Bent,

FLANGED, EXPANDED, TAPERED,
DEPRESS BEADED, EXPAND
BEADED, ROLLED, EXTERNAL UP-
SET, INTERNAL UPSET, SPUN
CLOSED, FORGED, BEVEL
FLANGED, FLATTENED, SWAGED,
FLUTED.



Consult us for engineering and
technical help in the selection of
tubing best suited to your needs.

At MICHIGAN we've never admitted there are such words as, "It can't be done!" That's why we've convinced thousands of manufacturers that MICHIGAN TUBING is an ideal, cost-saving product component. No matter what you manufacture, let us prove that the use of MICHIGAN TUBING can give you a better product and save you money.

A Quality Product,
can be worked in your plant or
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33 Years in the Business

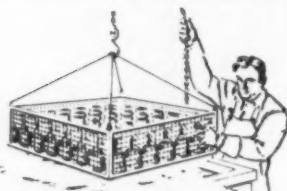
9450 BUFFALO STREET • DETROIT 12, MICHIGAN

FACTORIES: DETROIT, MICHIGAN • SHELBY, OHIO

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News about **UNICHROME** COATINGS for METALS

METALLIC • ORGANIC
DECORATIVE • PROTECTIVE



Bright, corrosion-resistant DIP FINISH for zinc

The Unichrome Dip Process—a chemical treatment—brightens zinc plate to chromium-like luster and protects it from dulling. Also used to chromate-treat zinc die castings. It provides both economy and quality in finishing wire goods, screws, nuts, bolts, and a variety of other products.



Three major benefits for plants doing chromium plating

(1) Unichrome S.R.H.S. Chromium offers higher efficiency, which enables it to cut plating time 20 to 80%, save power, step-up capacity of existing equipment. (2) It plates bright over wider range of current, thus reducing rejects due to the plate "burning" or "missing". (3) It regulates itself under normal operating conditions—thereby providing consistently better plating with less supervision.

Chemical-resistant coatings in the heavy-duty class

Unichrome Plastisol and Organosol Compounds, "4000 Series," possess a set of properties seldom found in one material. (1) They have the greater resistance of the vinyls to chemicals, oils, water. (2) This resistance is further increased by the thick coatings—up to 3/16"—that they produce. (3) And because they have flexibility, they withstand mechanical damage as well. (4) They are applied by dipping or spraying, and then baked.

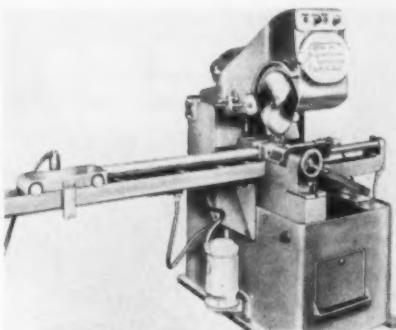
UNITED CHROMIUM, INCORPORATED

100 East 42nd St., New York 17, N. Y.
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In Canada:
United Chromium Limited, Toronto, Ont.

NEW PRODUCTION IDEAS

Continued

mounted on a swivel base for turning to the desired cutoff angle. Stock is fed into the machine manually or by an automatically operated air-powered stock feeder for lengths up to 24 in. Special



gaging and holding fixtures for odd shaped extrusions and intricate parts can be adapted to the machine. *Motch & Merryweather Machinery Corp.*

For more data insert No. 34 on postcard, p. 37.

Fork Lift Truck

Handles materials in big unit loads; uses pneumatic tires.

A giant fork lift truck on pneumatic tires handles loads weighing 24,000 lb and is 92 in. wide. Big 14.00-20 pneumatic tires and ample weight on the driving wheels en-



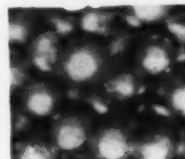
ables the Ross Series 24 to operate efficiently in yards having a minimum of prepared surfacing. The truck is powered by a heavy duty 126 hp gasoline engine and features a heavy duty spiral bevel differential drive axle with chain drive to a stationary load axle. Hoisting, tilting and steering are hydraulic. *Ross Carrier Co.*

For more data insert No. 35 on postcard, p. 37.

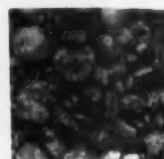
Resume Your Reading on Page 41

Here's Why **TRU-STEEL SHOT** Costs Less to Use

LIFE COMPARISON
TRU-STEEL vs. CHILLED IRON SHOT
Magnified 10X



TRU-STEEL
After 1500 Passes



CHILLED IRON
After 50 Passes

Users Find TRU-STEEL Has 5 Important Advantages

• LASTS MANY TIMES LONGER— LESS SHOT IS USED

Gray Forgings and Stamping, Ltd.: "We find Tru-Steel Shot lasts from 5 to 6 times as long as ordinary shot."

• REDUCES CLEANING COSTS PER TON

A Detroit Manufacturer: "Just figuring the savings in abrasive and parts alone, we showed a savings of 30% in the cost per ton of parts cleaned compared to our previous costs with chilled iron shot."

• SAVES STORAGE AND TRANS- PORTATION COSTS

A Prominent User: "In general Tru-Steel costs half as much as ordinary shot, cuts down on maintenance and costly parts with less handling and storage."

• INCREASES LIFE OF MACHINE PARTS

A Midwest Manufacturer: "Another big advantage we find is the longer life of the machine itself. We saved 63% in the cost of replacement parts, not counting the time saved by our maintenance men in not having to replace parts often."

• REDUCES MACHINE MAINTE- NANCE COSTS

A steel foundry reports the use of Tru-Steel Shot resulted in a savings of 73% on wearables, 63% on abrasive consumption, and 80% on maintenance labor.

Write for Bulletin No. 59

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WHEELABRATOR & EQUIPMENT CORP.
510 S. Byrkit Street, Mishawaka 3, Indiana

Mfd. by: Steel Shot Producers, Inc.

MARKET

IRON AGE
FOUNDED 1855
MARKETS & PRICES

Briefs and Bulletins

inventories—The question of whether some steel consumers have managed to build up their inventories despite tight supply has been bothering producers. One steel-maker ran into this situation recently: Due to operational problems, plus over-optimism on the part of some sales personnel, they were forced to cut back on allotments to some customers. They expected the roof to cave in when they handed out the bad news. Although some protests were as grim as expected, reaction on the whole was surprisingly mild.

foreign steel scramble—With chances of getting more steel from regular sources dimmer, midwestern steel users are trying to get foreign steel as hush-hush as possible for fear that their regular mill allotments will be sliced. Foreign steel distributors are working hard to bring steel in, urged on by consumers' disregard of letters of credit delay. Some firms are having foreign steel tested in reputable laboratories.

taking toll—The strain of keeping steelmaking operations close to 100 pct of capacity is beginning to take its toll. There are reports of breakdowns, hot mill trouble, etc. Maintenance men and production men alike are putting out extra effort to keep operations up. From here on their jobs will be even tougher.

deliveries—Purchasing agents report that in the past few weeks mills have been falling further behind on deliveries. They expect the picture to get blacker in the fourth quarter. Little companies see the steel going to big companies, and big companies have misgivings about the amount of steel they will be able to feed back to their suppliers.

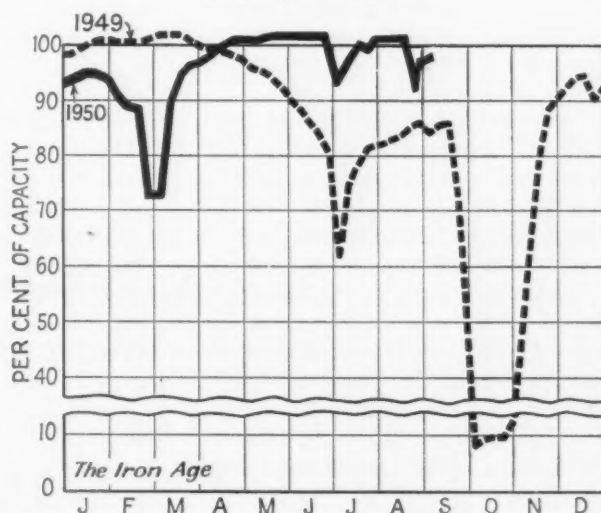
to make armor plate—Standard Steel Spring Co. expects to open production of armor plate this month and will rearrange its production facilities to do so. The firm also expects to hire between 500 and 600 more workers. Letters of intent have been received from manufacturers of tanks and other armored vehicles.

auto cutback?—Auto output may begin to show signs of weakness in September. The big auto producers may be able to fill the gaps created by recent disappointments on steel deliveries, but some of the smaller fellows may well be hanging on the ropes by that time—or beating on Big Three doors begging for more steel.

other uses—One producer put floor plates and electrical sheet on allocation this month when he discovered that floor plate was being diverted to uses for which it was not intended. New orders for floor plate, formerly easy to get, are being checked very carefully.

silvery iron—Pittsburgh Metallurgical Co., effective Aug. 23, increased prices of its silvery pig iron (electric furnace) \$6.50 per gross ton. New prices, for Niagara Falls, are SI 14.01 to 14.50, \$78.00; SI 14.51 to 15.00, \$79.00; and SI 15.01 to 15.00, \$80.00.

Steel Operations**



District Operating Rates—Per Cent of Capacity**

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
Aug. 27.....	97.0*	92.0	92.0*	92.0	80.0	104.0	102.0	104.0	106.0*	105.0*	89.0	89.0	61.0	97.5
Sept. 3.....	98.0	99.5	92.0	92.0	93.0	104.0	101.0	104.0	107.0	105.0	89.0	89.0	82.5	99.0

* Revised.

** Steel operations for the first half of 1950 are based on annual capacity of 99,392,800 net tons. Beginning July 1, 1950, operations are based on new annual capacity of 100,563,500 net tons.

Nonferrous Metals OUTLOOK

Market Activities

Anaconda follows copper boost by adding 2¢ . . . Duty to be paid by buyer . . . Spread is now from 22½¢ to 26½¢ to users . . . Lead goes up another 1¢; New York price is 15¢ per lb.



by JOHN ANTHONY

New York—Last week the price spread in the copper market became even more of a problem to buyers of fabricated products when another producer went to the 24½¢ level. Anaconda Copper Co. established its price at the higher level, with the duty on imported metal sold to domestic fabricators to be charged to the buyer.

This move has created a 4¢ spread in the cost of copper to different fabricators. Some fabricators are in a position to operate principally on domestic copper at a cost of 22½¢ per lb. Others will be required to pay 26½¢ for the bulk of their copper, even though they are not paying premium prices. The balance of the fabricators find their copper costs somewhere between these figures.

Last week two more fabricators began to charge their customers with the duty on imported copper. Revere Copper & Brass Co. and Bridgeport Brass Co. began to add a charge of 1½¢ per lb on copper products and 1¢ per lb on alloy products to take care of their duty costs. These fabricators also ad-

MONTHLY AVERAGE PRICES

The average prices of the major non-ferrous metals in August based on quotations appearing in THE IRON AGE, were as follows:

	Cents Per Pound
Electrolytic copper, Conn. Valley	22.537
Lake Copper, delivered	23.366
Straits tin, New York	81.021
Zinc, East St. Louis	15.00
Zinc, New York	15.72
Lead, St. Louis	12.726
Lead, New York	12.926

vanced their scrap buying prices to the level of the 24½¢ copper market, thereby placing them in a better position to compete with the conversion market.

Lead Scrap at 15¢

The price of lead was advanced another 1¢ on Sept. 1, bringing the New York market to 15¢ per lb. It was learned that some smelters were paying 15¢ per lb for lead scrap, indicating an even higher price for secondary metal.

Zinc producers continued to hold the price of zinc at 15.00 East St. Louis, even though there was a flurry in the market when one western producer sold High Grade and Special High Grade last week on the basis of 16½¢ for the Prime

Western grade. But other producers held the price line. Smelters are offering 16¢ for scrap zinc, on the basis of which the Prime Western price would be the equivalent of 19¢.

National Lead Co. advanced the price of antimony by 4¢ per lb last week, bringing it to 28½¢ Laredo, Tex.

Aluminum ingot prices resumed their rise last week with an average increase of ½¢ per lb. Pressure on the market has not been so active recently, since buyers have filled up on forward needs.

The tin market turned down last week, reaching 98.00¢ for prompt late last week. Some 1350 tons of British Ministry tin now in New York or due to arrive next month has been hanging over the market. The Ministry has been offering tenders that are not being taken.

The rapid upward spiral of metals prices in the last 2 months has been brought about largely by the advancing scrap market, sensitive to shortages of metals. To some, it is difficult to understand how a factor involving relatively small tonnages, compared to primary metal production, could dominate the market. But at a time of shortage when consumers as well as smelters are scrambling for supplies, the scrap market wields an influence out of proportion to its size.

NONFERROUS METALS PRICES

	Aug. 30	Aug. 31	Sept. 1	Sept. 2	Sept. 5
Copper, electro, Conn	22.50-	22.50-	22.50-	22.50-	22.50-
	24.50	24.50	24.50	24.50	24.50
Copper, Lake, delivered	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York	99.50	98.5	97.50		96.00*
Zinc, East St. Louis	15.00	15.00	15.00	15.00	15.00
Lead, St. Louis	13.80	13.80	14.80	14.80	14.80

Note: Quotations are going prices.

*Tentative.

MILL PRODUCTS

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 27.4¢; 4S, 61S-O, 29.3¢; 62S, 31.4¢; 24S-O, 24S-OAL, 30.3¢; 75S-O, 75S-OAL, 36.8¢; 0.081 in., 2S, 28.4¢; 4S, 61S-O, 30.7¢; 62S, 32.8¢; 24S-O, 24S-OAL, 31.4¢; 75S-O, 75S-OAL, 38.5¢; 0.032 in., 2S, 3S, 30.0¢; 4S, 61S-O, 34.0¢; 62S 36.7¢; 24S-O, 24S-OAL, 38.4¢; 75S-O, 75S-OAL, 48-1¢.

Plate: ¼ in. and heavier: 2S, 3S, F, 24.5¢ (S-F, 27¢; 62S-F, 28.1¢; 61S-O, 27.6¢; 24S-F, 24S-FAL, 28.1¢; 75S-F, 75S-FAL, 34.9¢).

Extruded Solid Shapes: Shape factors 1 to 4, 33.6¢ to 67¢; 1 to 18, 34.5¢ to 79¢; 23 to 26, 36.3¢ to 110¢; 35 to 37, 43.3¢ to 11.6¢.

Red Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 34.5¢ to 31¢; Cold-finished, 0.375 to 3 in., 2S, 3S, 37¢ to 32.5¢.

Screw Machine Stock: Rounds, 11S-T3, R317-T4, ½ to 1 1/8 in., 49.5¢ to 38.5¢; ¾ to 1 ½ in., 58¢ to 36¢; 1 9/16 to 3 in., 36¢ to 38¢; 17S-T4 lower by 1¢ per lb. Base 6000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.: 2S, 36.5¢ to 27¢; 62S, 44.5¢ to 32.5¢; 66S, 47.5¢ to 35¢; 17S-T4, 50.5¢ to 35¢; 61S-T4, 45¢ to 34.5¢; 75S-T4, 76.5¢ to 55.5¢.

Extruded Tubing, Rounds: 63S-T6; OD in in.: 1¼ to 2, 33.5¢ to 49¢; 2 to 4, 30.5¢ to 41.3¢; 4 to 6, 31¢ to 37.8¢; 6 to 9, 31.5¢ to 39.3¢.

Roofing Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., \$1.008; 96 in., \$1.344; 120 in., \$1.679; 144 in., \$2.017. Gage 0.024 in. x 28 in., 72 in., \$1.224; 96 in., \$1.633; 120 in., \$2.042; 144 in., \$2.451. Coiled Sheet: 0.019 in. x 28 in., 24.7¢ per lb.; 0.024 in. x 28 in., 28.7¢ per lb.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed)

Sheet and Plate: M-O, FS-O, ¼ in. 58¢ to 60¢; 3/16 in. 60¢ to 62¢; ½ in. 62¢ to 64¢; B & S gage 10, 63¢ to 65¢; 12, 67¢ to 69¢; 14, 73¢ to 78¢; 16, 80¢ to 85¢; 18, 88¢ to 93¢; 20, \$1.00 to \$1.05; 22, \$1.22-\$1.31; 24, \$1.62-\$1.76. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, FS, diam in., ¼ in. to 0.311, 66¢; ½ in. to ¾, 60¢; 1¼ to 1.749, 47¢; 2¼ to 6 in., 46¢. Other alloys higher. Base: 2 up to ¼ in. diam, 10,000 lb; ¼ in. to 1¼ in., 20,000 lb; 1¼ in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M, FS, in weight per ft. for perimeters of less than size indicated, 0.10 to 0.11 lb per ft. per. up to 3.5 in., 59.5¢; 0.22 to 0.25 lb per ft. per. up to 5.9 in., 55¢; 0.50 to 0.59 lb per ft. per. up to 8.6 in., 50.5¢; 1.8 to 2.59 lb per ft. per. up to 19.5 in., 47.5¢; 4 to 6 lb per ft. per. up to 28 in., 46.5¢. Other alloys higher. Base, in weight per ft of shape: Up to ¼ lb, 10,000 lb; ¼ lb to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, FS, wall thickness, outside diam, in., 0.049 to 0.057, ¼ in. to 5/16, \$1.40; 5/16 to ¾, \$1.26; ¾ to 1, \$1.10; 1 to 2 in., 76¢; 0.165 to 0.219, ¾ to 1, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1¼ in., 10,000 lb; 1¼ in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

Nickel and Monel

(Base prices, cents per lb, f.o.b. mill)

"A" Nickel Monel		
Sheets, cold-rolled	69	53
Strip, cold-rolled	75	56
Rods and bars	65	51
Angles, hot-rolled	65	51
Plates	67	52
Seamless tubes	98	86
Shot and blocks		46

Copper, Brass, Bronze

(Cents per lb, freight prepaid on 200 lb)

Extruded		
Sheets	Rods	Shapes
Copper	37.43	37.03
Copper, h-r	33.23	
Copper, drawn	34.53	
Low brass	35.52	35.21
Yellow brass	34.19	33.88
Red brass	35.96	35.65
Naval brass	33.90	32.96
Leaded brass		28.54
Com'l bronze	36.93	36.62
Manganese bronze	42.40	36.27
Phosphor bronze	55.11	55.36
Muntz metal	37.13	32.69
Everdur, Her-culoy, Olym-pic, etc.	42.05	40.99
Nickel silver		
10 pct	45.48	47.74
Arch. bronze		32.65

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	17.50
Aluminum pig	16.50
Antimony, American, Laredo, Tex.	28.50
Beryllium metal, 95%, lumps, beads	\$95.00
Beryllium copper, 3.75-4.25% Be, dollars per lb contained Be	\$30.00
Beryllium aluminum 5% Be, dollars per lb contained Be	\$65.00
Bismuth, ton lots	\$2.00
Cadmium, del'd	\$2.15
Cobalt, 97-99% (per lb)	\$1.80 to \$1.87
Copper, electro, Conn. Valley	22.50 to 24.50
Copper, Lake, delivered	24.625
Gold, U. S. Treas., dollars per oz.	\$35.00
Indium, 99.8%, dollars per troy oz.	\$2.25
Iridium, dollars per troy oz.	\$220
Lead, St. Louis	14.80
Lead, New York	15.00
Magnesium, 99.8+%, f.o.b. Freeport Tex., 10,000 lb	22.50
Magnesium, sticks, 100 to 500 lb	39.00¢ to 41.00¢
Mercury, dollars per 76-lb flask f.o.b. New York	\$79 to \$80
Nickel, electro, f.o.b. New York	51.22
Nickel oxide sinter, f.o.b. Copper Cliff, Ont., contained nickel	44.25
Palladium, dollars per troy oz.	\$24.00
Platinum, dollars per troy oz.	\$87 to \$90
Silver, New York, cents per oz.	72.75
Tin, New York	96.00
Zinc, East St. Louis	15.00
Zinc, New York	15.72
Zirconium copper, 50 pct	\$6.20

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot	
No. 115	25.50
No. 120	25.00
No. 123	24.50
80-10-10 ingot	
No. 305	29.50
No. 315	27.00
88-10-2 ingot	
No. 210	38.00
No. 215	35.00
No. 245	29.50
Yellow ingot	
No. 405	21.75
Manganese bronze	
No. 421	27.00

Aluminum Ingot

(Cents per lb, 30,000 lb lots)

95-5 aluminum-silicon alloys	
0.30 copper, max.	27.00-27.50
0.60 copper, max.	26.50-27.00
Piston alloys (No. 122 type)	25.75-26.25
No. 12 alum. (No. 2 grade)	25.00-25.50
108 alloy	25.50-26.00
195 alloy	26.50-27.00
13 alloy	27.00-27.50
AXS-679	25.50-26.00

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	26.00-26.50
Grade 2—92-95%	25.00-25.50
Grade 3—90-92%	24.00-24.50
Grade 4—85-90%	23.50-24.00

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	39½
Electrodeposited	33½
Roller, oval, straight, delivered	36.59
Forged ball anodes	41
Brass, 80-20	
Cast, oval, 15 in. or longer	34½
Zinc, oval	24
Ball anodes	23
Nickel 99 pct plus	
Cast	68.00
Roller, depolarized	69.00
Cadmium	\$2.30
Silver 999 fine, roller, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	79½

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	52.15
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt allowed	20½
Nickel chloride, 375 lb drum	27½
Silver cyanide, 100 oz lots, per oz.	61½
Sodium cyanide, 96 pct domestic	
200 lb drums	19.25
Zinc cyanide, 100 lb drums	45.85

SCRAP METALS

Brass Mill Scrap

(Cents per pound; add ¼¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turn-
Copper	21½	20¾
Yellow brass	18½	16¾
Red brass	19½	19½
Comm. bronze	20½	19¾
Mang. bronze	17½	16½
Brass rod ends	17½	

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	21.75
No. 2 copper wire	20.75
Light copper	19.75
Refinery brass	20.00*
Radiators	15.00

*Dry copper content

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer)

No. 1 copper wire	21.75
No. 2 copper wire	20.75
Light copper	19.75
No. 1 composition	19.00
No. 1 comp turnings	18.75
Roller brass	17.00
Brass pipe	18.00
Radiators	15.50
Heavy yellow brass	14.25-14.50

Aluminum	
Mixed old cast	15.00
Mixed old clips	15.50
Mixed turnings, dry	14.00
Pots and pans	15.00
Low copper	16.25

Dealers' Scrap

(Dealers' buying prices, f.o.b. New York in cents per pound)

Copper and Brass	
No. 1 heavy copper and wire	20 —20½
No. 2 heavy copper and wire	19 —19½
Light copper	18 —18½
Auto radiators (unsweated)	13½ —14
No. 1 composition	17 —17½
No. 1 composition turnings	16½ —17
Clean red car boxes	15 —15½
Cocks and faucets	15 —15½
Mixed heavy yellow brass	12 —12½
Old roller brass	13½ —13¾
Brass pipe	15½ —15¾
New soft brass clippings	15½ —16
Brass rod ends	13½ —14
No. 1 brass rod turnings	13½ —13¾

Aluminum

Alum. pistons and struts	8½ —9
Aluminum crankcases	11 —11½
2S aluminum clippings	13½ —14
Old sheet and utensils	11 —11½
Borings and turnings	7 —7½
Misc. cast aluminum	11 —11½
Dural clips (24S)	11 —11½

Zinc

New zinc clippings	11½ —12
Old zinc	9½ —9¾
Zinc routings	6¼ —6¾
Old die cast scrap	6¼ —6¾

Nickel and Monel

Pure nickel clippings	38 —41
Clean nickel turnings	35 —38
Nickel anodes	38 —41
Nickel rod ends	38 —41
New Monel Clippings	17 —21
Clean Monel turnings	15 —17
Old sheet Monel	16 —20
Inconel clippings	22 —26
Nickel silver clippings, mixed	9 —10
Nickel silver turnings, mixed	6 —7

Lead

Soft scrap, lead	12¼ —12¾
Battery plates (dry)	7½ —7¾

Magnesium

Segregated solids	9 —10
Castings	5½ —6½

Miscellaneous

Block tin	78 —80
No. 1 pewter	58 —60
No. 1 auto babbitt	50 —52
Mixed common babbitt	13 —13½
Solder joints	16½ —17
Siphon tops	46 —48
Small foundry type	15½ —16
Monotype	14½ —15
Lino. and stereotype	13½ —14
Electrotype	12½ —13¼
New type shell cuttings	18 —18½
Hand picked type shells	6 —6½
Lino. and stereo. dross	4 —4½
Electro. dross	2½ —3

MARKETS—PRICES—TRENDS



SCRAP

Iron & Steel

Steel Grades Steadier Following Confusion

Consumer efforts to put a halt to the rapidly spiraling steel scrap prices have been definitely successful—at least for the time being. The Pittsburgh mills seem to be rather well situated regarding their scrap inventories and so can continue their lower offerings.

What will happen when they begin to need the steel to continue the high rate of the industry will probably be a renewed upsurge. There are already some members of the trade who feel that the recent cutback in prices will retard the flow of scrap even though the current prices are admittedly at a high level.

All in all, the market for steel-making scrap is still very confused but it is far clearer than it was a week ago.

Railroad items continue to be quite strong in most markets and the demand for cast material is definitely on the upswing. No. 1 cupola cast went up \$6.00 to \$8.00 on the West Coast.

PITTSBURGH—Several mills have bought No. 1 heavy melting steel at \$44.00, confirming last week's appraisal price. The tonnage has not been large, but brokers here will sell to any mill at that figure. Some higher priced orders are still outstanding, however. Prices of other grades generally were softer. Some low phos in 5-ft lengths was sold for \$45.50,

but this was not representative of the market. No. 1 railroad was off \$4.00 on appraisal. The turnings market continued strong, however, and machine shop turnings were up 50c. The mills are comfortably situated on inventory, so it may be some weeks before the \$44.00 market will be subjected to a real test. There is always the possibility that scrap sources might begin to dry up at that figure, forcing higher prices to bring it out into the scrap-minus Pittsburgh market.

CHICAGO—The market is slightly weaker in the Chicago area this week because of sales made at lower prices in the eastern districts last week. A major consumer was expected to come into the market this week. It is reported that they will offer to pay \$40.00 and \$38.00 respectively for No. 1 and No. 2 heavy melting steel. Some big brokers say they will sell at these prices. A few brokers are starting to offer \$39.00 and \$37.00 for these grades but are not able to pick up any tonnage. Short shovelling turnings are up \$1.00 to \$33.00 per gross ton.

PHILADELPHIA—Heavy melting steel held last week at previous levels, although

Correction

Early editions of the Aug. 31 issue of *THE IRON AGE* contained some inaccurate scrap price quotations. The correct quotations, which appeared in later editions are: Pittsburgh: No. 1 hvy. melting and No. 1 bundles \$43.50 to \$44.00. Philadelphia: No. 1 hvy. melting, No. 1 bundles, and hvy. axle forge turnings \$38.00 to \$39.00, low phos punchings, plate, and low phos 5 ft and under \$44.00 to \$45.00, and low phos bundles \$41.00 to \$42.00. New York: No. 1 hvy. melting \$33.50 to \$34.00, No. 2 hvy. melting \$27.50 to \$28.50, and No. 2 bundles \$26.00 to \$27.00; Youngstown: No. 1 hvy. melting and No. 1 bundles \$43.50 to \$44.00.

Last minute developments in the market, hours after our deadline, necessitated stopping the presses but, unfortunately, some of the early copies did get out.

buying was being done by some factors at higher prices. Dealers are still bullish about the market and are reported to be competing actively for scrap. There is some question whether mill resistance to higher levels can hold down the market. Dealers are finding it more difficult to move material to the Pittsburgh market. Rails and malleable are very scarce, bringing a \$1.00 rise in these grades. Machinery cast is \$1.00 higher. Yard cast is being bought at a \$4.00 range.

NEW YORK—This market is still somewhat confused but clarification is much closer than a week ago. Scrap is beginning to move again and there is high competition for it. Price-wise, the market is on its way up again in practically all grades. The references to price advances in this paragraph last week was in error. The correct prices appeared in late editions and are repeated in the box on this page.

DETROIT—Mill resistance has turned prices downward here although the high prices brought recently by industrial listers lingers as a retarding factor in the downward slide. Most steel grades, with the exception of blast furnace material, are down \$2.00 to \$3.00 this week. A further slump of some grades, bundles and blast furnace material for example, is anticipated. With the exception of No. 1 bundles, actual sales of all grades at the prices quoted have been reported. Cast grades are strong and advances up to \$2.00 per ton on these items are reported.

CLEVELAND—Sale of a representative tonnage of No. 1 heavy melting at \$44.00 to a major consumer in the Valley halted, temporarily at least, the upward spiral of scrap prices. Other grades had not moved at press time, and in the absence of sales and offers, prices are unchanged. Reaction to the break is mixed, but the prevailing opinion is that tonnage is not going to tumble in at \$44.00. This attitude suggests that the stage has been set for up-grading. Foundry demand is very strong, and prices of the foundry grades will probably be disproportionately high in the present merchant iron squeeze.

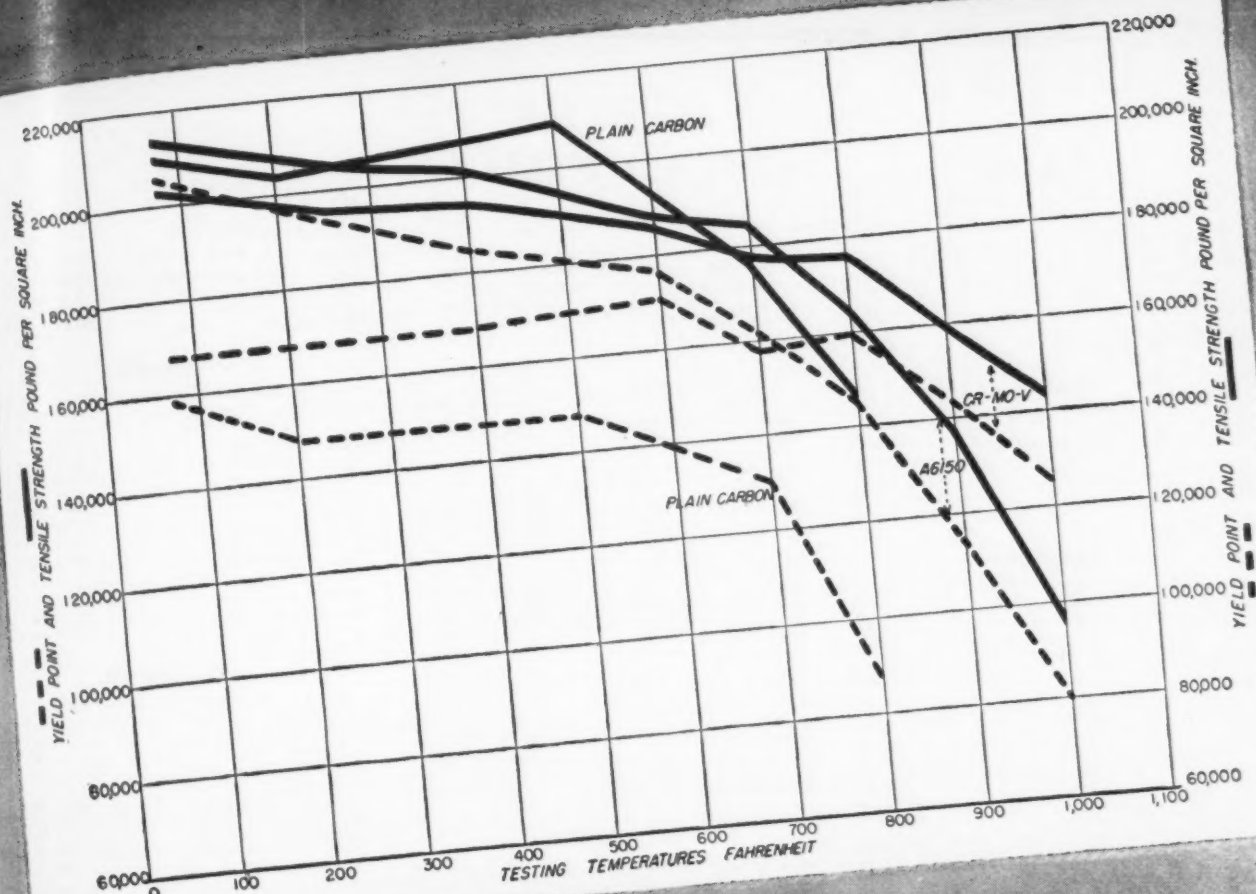
ST. LOUIS—Locomotive tires and railroad spring steel were the only items to fall here and that was because a major consumer of those items dropped out of the market. Most other grades held at last week's prices. Openhearth scrap was a bit stronger and the cast market is showing a few increases. Generally, movement of material is slow because of heavy rains, which affected trucking, and the car shortage.

CINCINNATI—Sales in other districts weakened the market here temporarily with No. 1 heavy melting leading the parade down. Based on mill offers, No. 1 heavy melting steel is quotable here at \$40.50 to \$41.00 this week. Demand for foundry grades is strong and tonnage is moving freely at quoted prices. Movement of openhearth material has tapered off, probably awaiting further clarification of prices.

BOSTON—Prices in the scrap market here continued in the downward trend that was started last week. No. 1 heavy melting, No. 1 bundles, and No. 1 bushelling were all off a dollar. Cast scrap was down by \$1.00 to \$2.00 a ton. Machine shop turnings showed a gain of \$1.00, the only gain of the week, and shovelling turnings were down 50¢.

BIRMINGHAM—The scrap market here is continuing strong in the Birmingham district with numerous small orders being placed for practically all items. A tonnage of No. 2 heavy melting steel was sold for \$32.00 a ton but most of the No. 2 is being sold in the range of \$30.00 to \$31.00, up \$1.00 from last week. More scrap is expected to come into the local market because of relaxed outside buying.

BUFFALO—Efforts of consumers in other areas to curb rising prices on scrap only served to prolong the stalemate in the market here. Top mill consumer continues to hold bid for steel making grades 2.00 to 3.00 below prevailing price ranges. Recent influx of boat scrap, from the east on the canal and from upper lake points, has helped mills to maintain large reserve stocks.



HIGH TEMPERATURE PROPERTIES of Cr-V and Cr-Mo-V Spring Steels

SPRINGS FOR SERVICE at elevated temperatures require steels which resist softening and lowering of the yield point. Unless hardness and yield strength are stabilized by correct alloy additions to the steel, these properties deteriorate rapidly as the temperature is raised.

The chart above shows the yield point and tensile strength of three types of spring steel at elevated temperatures determined by standard short-time tension tests.

Springs of plain carbon steel are sometimes used at moderately elevated temperatures, although their lower yield values prevent them from giving service as satisfactory as that of the alloy spring steels.

Chromium-vanadium steel springs, such as AISI 6150, give better service at ordinary temperatures because of the higher yield point. In addition, they may be used at operating temperatures up to about 700° or 750° F

because they retain high yield point values as the temperature is increased.

Chromium-molybdenum-vanadium steel was especially designed for springs operating at temperatures in excess of 750° F. It can be used for springs operating at temperatures as high as 850° F or even higher under some conditions. At 800° F, the yield point of this steel is still greater than that of plain carbon steel at room temperature.

If you have a problem in spring applications at elevated temperatures, our metallurgical engineers will be glad to help you solve it.

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Iron and Steel

SCRAP PRICES

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	\$43.50 to \$44.00
No. 2 hvy. melting	37.50 to 38.00
No. 1 bundles	43.50 to 44.00
No. 2 bundles	36.50 to 37.00
Machine shop turn.	33.50 to 34.00
Mixed bor. and ms. turns.	33.50 to 34.00
Shoveling turnings	36.50 to 37.00
Cast iron borings	35.50 to 36.00
Low phos. plate	48.50 to 49.00
Heavy turnings	42.50 to 43.00
No. 1 RR. hvy. melting	45.50 to 46.00
Scrap rails, random lgth.	49.00 to 49.50
Rails 2 ft and under	50.00 to 51.00
RR. steel wheels	52.00 to 53.00
RR. spring steel	52.00 to 53.00
RR. couplers and knuckles	52.00 to 53.00
No. 1 machinery cast	48.50 to 49.00
Mixed yard cast	44.00 to 44.50
Heavy breakable cast	39.50 to 40.00
Malleable	51.00 to 52.00

Chicago

No. 1 hvy. melting	\$39.00 to \$40.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 factory bundles	39.00 to 40.00
No. 1 dealers' bundles	39.00 to 40.00
No. 2 dealers' bundles	31.00 to 32.00
Machine shop turn.	29.00 to 30.00
Mixed bor. and turn.	30.00 to 31.00
Shoveling turnings	32.00 to 33.00
Cast iron borings	31.00 to 32.00
Low phos. forge crops	49.00 to 50.00
Low phos. plate	48.00 to 49.00
No. 1 RR. hvy. melting	44.50 to 45.50
Scrap rails, random lgth.	53.00 to 54.00
Rerolling rails	57.00 to 58.00
Rails 2 ft and under	58.00 to 59.00
Locomotive tires, cut	54.00 to 55.00
Cut bolsters & side frames	51.00 to 52.00
Angles and splice bars	54.00 to 55.00
RR. steel car axles	74.00 to 75.00
RR. couplers and knuckles	51.00 to 52.00
No. 1 machinery cast	50.00 to 51.00
No. 1 agricul. cast	47.00 to 48.00
Heavy breakable cast	39.00 to 40.00
RR. grate bars	38.00 to 39.00
Cast iron brake shoes	41.00 to 42.00
Cast iron car wheels	42.00 to 43.00
Malleable	54.00 to 55.00

Philadelphia

No. 1 hvy. melting	\$38.00 to \$39.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 bundles	38.00 to 39.00
No. 2 bundles	31.00 to 32.00
Machine shop turn.	27.00 to 28.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	32.00 to 33.00
Low phos. punchings, plate	44.00 to 45.00
Low phos. 5 ft and under	44.00 to 45.00
Low phos. bundles	41.00 to 42.00
Hvy. axle forge turn.	38.00 to 39.00
Clean cast chem. borings	39.00 to 40.00
RR. steel wheels	46.00 to 47.00
RR. spring steel	46.00 to 47.00
Rails 18 in. and under	51.00 to 52.00
No. 1 machinery cast	44.00 to 45.00
Mixed yard cast	36.00 to 40.00
Heavy breakable cast	37.50 to 38.50
Cast iron carwheels	46.00 to 47.00
Malleable	50.00 to 51.00

Cleveland

No. 1 hvy. melting	\$41.00 to \$41.50
No. 2 hvy. melting	35.50 to 36.00
No. 1 busheling	41.00 to 41.50
No. 1 bundles	41.00 to 41.50
No. 2 bundles	28.00 to 28.50
Machine shop turn.	30.00 to 30.50
Mixed bor. and turn.	33.00 to 33.50
Shoveling turnings	33.00 to 33.50
Cast iron borings	33.00 to 33.50
Low phos. 2 ft and under	44.00 to 44.50
Steel axle turn.	41.00 to 41.50
Drop forge flashings	41.00 to 41.50
No. 1 RR. hvy. melting	47.00 to 47.50
Rails 3 ft and under	54.00 to 55.00
Rails 18 in. and under	55.00 to 56.00
No. 1 machinery cast	50.00 to 51.00
RR. cast	50.00 to 51.00
RR. grate bars	38.00 to 39.00
Stove plate	42.00 to 43.00
Malleable	50.00 to 51.00

Youngstown

No. 1 hvy. melting	\$43.50 to \$44.00
No. 2 hvy. melting	37.50 to 38.00
No. 1 bundles	43.50 to 44.00

Buffalo

No. 1 hvy. melting	\$39.00 to \$40.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 busheling	36.00 to 37.00
No. 1 bundles	37.00 to 38.00
No. 2 bundles	34.00 to 35.00
Machine shop turn.	30.00 to 31.00
Mixed bor. and turn.	30.00 to 31.00
Shoveling turnings	32.00 to 34.00
Cast iron borings	30.00 to 31.00
Low phos. plate	41.00 to 42.00
Scrap rails, random lgth.	44.00 to 45.00
Rails 2 ft and under	48.00 to 50.00
RR. steel wheels	47.00 to 48.00
RR. spring steel	47.00 to 48.00
RR. couplers and knuckles	47.00 to 48.00
No. 1 machinery cast	41.50 to 42.00
No. 1 cupola cast	38.50 to 39.00
Small Indus. malleable	37.00 to 38.00

Birmingham

No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	30.00 to 31.00
No. 2 bundles	27.00 to 28.00
No. 1 busheling	29.00 to 30.00
Machine shop turn.	27.00 to 28.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	24.00 to 25.00
Bar crops and plate	41.00 to 42.00
Structural and plate	41.00 to 42.00
Scrap rails, random lgth.	43.00 to 44.00
Rerolling rails	48.00 to 49.00
Rails 2 ft and under	48.00 to 49.00
Angles & splice bars	47.00 to 48.00
Std. steel axles	44.00 to 45.00
No. 1 cupola cast	50.00 to 51.00
Stove plate	43.00 to 44.00
Cast iron carwheels	37.00 to 38.00

St. Louis

No. 1 hvy. melting	\$39.00 to \$40.00
No. 2 hvy. melting	34.50 to 36.50
No. 2 bundled sheets	33.00 to 34.00
Machine shop turn.	27.50 to 28.50
Shoveling turnings	28.00 to 29.00
Rails, random lengths	50.00 to 51.00
Rails 3 ft and under	54.00 to 56.00
Locomotive tires, uncut	47.00 to 48.00
Angles and splice bars	54.00 to 55.00
Std. steel car axles	76.00 to 78.00
RR. spring steel	49.00 to 50.00
No. 1 machinery cast	44.00 to 45.00
Hvy. breakable cast	39.00 to 40.00
Cast iron brake shoes	43.00 to 45.00
Stove plate	38.00 to 39.00
Cast iron car wheels	48.00 to 49.00
Malleable	52.00 to 54.00

New York

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	\$33.50 to \$34.00
No. 2 hvy. melting	29.00 to 30.00
No. 2 bundles	28.00 to 28.50
Machine shop turn.	23.50 to 24.00
Mixed bor. and turn.	23.50 to 24.00
Shoveling turnings	25.50 to 26.00
Clean cast chem. bor.	34.00 to 35.00
No. 1 machinery cast	34.50 to 35.00
Mixed yard cast	32.50 to 33.00
Charging box cast	32.50 to 33.00
Heavy breakable cast	31.50 to 32.00
Unstrp. motor blocks	25.00 to 26.00

Boston

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	\$32.00 to \$32.50
No. 2 hvy. melting	25.00 to 26.00
No. 1 bundles	32.00 to 32.50

No. 2 bundles	\$25.00 to \$25.50
Machine shop turn.	23.00 to 23.50
Mixed bor. and turn.	22.00 to 23.00
Shoveling turnings	24.50 to 25.00
No. 1 busheling	31.50 to 32.00
Clean cast chem. borings	29.00 to 30.00
No. 1 machinery cast	34.00 to 35.00
Mixed cupola cast	31.00 to 32.00
Heavy breakable cast	28.00 to 29.00
Stove plate	29.00 to 30.00

Detroit

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	\$36.00 to \$36.50
No. 2 hvy. melting	30.00 to 31.00
No. 1 bundles	37.00 to 38.00
New busheling	36.00 to 36.50
Flashings	36.00 to 36.50
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	31.00 to 32.00
Cast iron borings	31.00 to 32.00
Low phos. plate	36.50 to 37.00
No. 1 cupola cast	42.00 to 43.00
Heavy breakable cast	35.00 to 36.00
Stove plate	36.00 to 37.00
Automotive cast	45.00 to 46.00

Cincinnati

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	\$40.50 to \$41.00
No. 2 hvy. melting	34.50 to 35.00
No. 1 bundles	40.50 to 41.00
No. 2 bundles, black	34.50 to 35.00
No. 2 bundles, mixed	27.50 to 28.00
Machine shop turn.	24.50 to 25.00
Mixed bor. and turn.	26.50 to 27.00
Shoveling turnings	27.50 to 28.00
Cast iron borings	27.50 to 28.00
Low phos. 18 in. under	51.00 to 52.00
Rails, random lengths	46.00 to 47.00
Rails, 18 in. and under	54.00 to 55.00
No. 1 cupola cast	50.00 to 51.00
Hvy. breakable cast	41.00 to 42.00
Drop broken cast	52.00 to 53.00

San Francisco

F.o.b. shipping point:

No. 1 hvy. melting	\$23.50
No. 2 hvy. melting	21.50
No. 1 bundles	23.50
No. 2 bundles	19.50
No. 3 bundles	16.50
Machine shop turn.	12.00
Elec. fur. 1 ft and under	34.00
No. 1 RR. hvy. melting	23.50
Scrap rails, random lgth.	23.50
No. 1 cupola cast	\$40.00 to 41.00

Los Angeles

F.o.b. shipping point:

No. 1 hvy. melting	\$23.50
No. 2 hvy. melting	21.00
No. 1 bundles	23.50
No. 2 bundles	19.50
No. 3 bundles	16.50
Mach. shop turn.	11.00
Elec. fur. 1 ft and under	36.00
No. 1 RR. hvy. melting	23.50
No. 1 cupola cast	\$40.00 to 43.00

Seattle

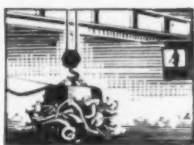
No. 1 hvy. melting	\$24.00
No. 2 hvy. melting	24.00
No. 1 bundles	22.00
No. 2 bundles	22.00
No. 3 bundles	18.00
Elec. fur. 1 ft and under	\$29.00 to 30.00
RR. hvy. melting	25.00
No. 1 cupola cast	35.00
Heavy breakable cast	25.00

Hamilton, Ont.

No. 1 hvy. melting	\$30.00
No. 1 bundles	30.00
No. 2 bundles	29.50
Mechanical bundles	28.00
Mixed steel scrap	26.00
Mixed bor. and turn.	23.00
Rails, remelting	30.00
Rails, rerolling	33.00
Bushelings	24.50
Bush., new fact, prep'd.	29.00
Bush., new fact, unprep'd.	23.00
Short steel turnings	23.00
Cast scrap	40.00

*For the Purchase or Sale of
Iron and Steel Scrap...*

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel:	Sept. 5, 1950	Aug. 29, 1950	Aug. 8, 1950	Sept. 6, 1949
(cents per pound)				
Hot-rolled sheets	3.35	3.35	3.35	3.25
Cold-rolled sheets	4.10	4.10	4.10	4.00
Galvanized sheets (10 ga)	4.40	4.40	4.40	4.40
Hot-rolled strip	3.25	3.25	3.25	3.25
Cold-rolled strip	4.21	4.21	4.21	4.038
Plate	3.50	3.50	3.50	3.40
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	34.50	34.50	34.50	33.00

Tin and Terneplate:	Sept. 5, 1950	Aug. 29, 1950	Aug. 8, 1950	Sept. 6, 1949
(dollars per base box)				
Tinplate (1.50 lb) cokes	\$7.50	\$7.50	\$7.50	\$7.75
Tinplate, electro (0.50 lb)	6.60	6.60	6.60	6.70
Special coated mfg. ternes	6.35	6.35	6.35	6.65

Bars and Shapes:	Sept. 5, 1950	Aug. 29, 1950	Aug. 8, 1950	Sept. 6, 1949
(cents per pound)				
Merchant bars	3.45	3.45	3.45	3.35
Cold-finished bars	4.145	4.145	4.145	3.995
Alloy bars	3.95	3.95	3.95	3.75
Structural shapes	3.40	3.40	3.40	3.25
Stainless bars (No. 302)	30.00	30.00	30.00	28.50
Wrought iron bars	9.50	9.50	9.50	9.50

Wire:	Sept. 5, 1950	Aug. 29, 1950	Aug. 8, 1950	Sept. 6, 1949
(cents per pound)				
Bright wire	4.50	4.50	4.50	4.15

Rails:	Sept. 5, 1950	Aug. 29, 1950	Aug. 8, 1950	Sept. 6, 1949
(dollars per 100 lb)				
Heavy rails	\$3.40	\$3.40	\$3.40	\$3.20
Light rails	3.75	3.75	3.75	3.55

Semifinished Steel:	Sept. 5, 1950	Aug. 29, 1950	Aug. 8, 1950	Sept. 6, 1949
(dollars per net ton)				
Rerolling billets	\$54.00	\$54.00	\$54.00	\$52.00
Slabs, rerolling	54.00	54.00	54.00	52.00
Forging billets	63.00	63.00	63.00	61.00
Alloy blooms, billets, slabs	66.00	66.00	66.00	63.00

Wire Rod and Skelp:	Sept. 5, 1950	Aug. 29, 1950	Aug. 8, 1950	Sept. 6, 1949
(cents per pound)				
Wire rods	3.85	3.85	3.85	3.40
Skelp	3.15	3.15	3.15	3.25

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron:	Sept. 5, 1950	Aug. 29, 1950	Aug. 8, 1950	Sept. 6, 1949
(per gross ton)				
No. 2, foundry, del'd Phila.	\$51.76	\$51.76	\$51.76	\$50.42
No. 2, Valley furnace	46.50	46.50	46.50	46.50
No. 2, Southern Cin'ti	49.08	49.08	49.08	45.47
No. 2, Birmingham	42.38	42.38	42.38	39.38
No. 2, foundry, Chicago†	46.50	46.50	46.50	46.50
Basic del'd Philadelphia	50.92	50.92	50.92	49.92
Basic, Valley furnace	46.00	46.00	46.00	46.00
Malleable, Chicago†	46.50	46.50	46.50	46.50
Malleable, Valley	46.50	46.50	46.50	46.50
Charcoal, Chicago	68.56	68.56	68.56	68.56
Ferromanganese†	173.40	173.40	173.40	173.40

†The switching charge for delivery to foundries in the Chicago district is \$1 per ton.

‡Average of U. S. prices quoted on Ferroalloy page.

Scrap:	Sept. 5, 1950	Aug. 29, 1950	Aug. 8, 1950	Sept. 6, 1949
(per gross ton)				
Heavy melt'g steel, P'gh.	\$43.75	\$43.75	\$43.50	\$24.75
Heavy melt'g steel, Phila.	38.50	38.50	35.50	22.50
Heavy melt'g steel, Ch'go	39.50	40.50	38.50	24.50
No. 1 hy. com. sh't, Det.	37.50	40.50	38.50	23.50
Low phos. Young'n	46.25	46.75	45.75	29.75
No. 1 cast, Pittsburgh	48.75	48.75	44.75	36.50
No. 1 cast, Philadelphia	44.50	43.50	40.50	33.50
No. 1 cast, Chicago	50.50	50.50	47.50	41.50

Coke: Connellsville:	Sept. 5, 1950	Aug. 29, 1950	Aug. 8, 1950	Sept. 6, 1949
(per net ton at oven)				
Furnace coke, prompt	\$14.25	\$14.25	\$14.25	\$14.25
Foundry coke, prompt	16.25	16.25	16.25	15.75

Nonferrous Metals:	Sept. 5, 1950	Aug. 29, 1950	Aug. 8, 1950	Sept. 6, 1949
(cents per pound to large buyers)				
Copper, electro, Conn.	22.60	22.60	22.50	17.625
Copper, Lake, Conn.	24.625	24.625	22.625	17.75
Tin, Straits, New York	96.00†	\$1.02*	99.25	\$1.03
Zinc, East St. Louis	15.00	15.00	15.00	10.25
Lead, St. Louis	14.80	13.80	11.80	14.925
Aluminum, virgin	17.50	17.50	17.50	17.00
Nickel, electrolytic	51.22	51.22	51.22	42.03
Magnesium, ingot	22.50	22.50	22.50	20.50
Antimony, Laredo, Tex.	28.50	24.50	24.50	38.50

†Tentative. *Revised.

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.)

Composite Prices

Finished Steel Base Price	Sept. 5, 1950
One week ago	3.837¢ per lb.
One month ago	3.837¢ per lb.
One year ago	3.705¢ per lb.

High	Low
1950.... 3.837¢ Jan. 3	3.837¢ Jan. 3
1949.... 3.837¢ Dec. 27	3.3705¢ May 3
1948.... 3.721¢ July 27	3.193¢ Jan. 1
1947.... 3.193¢ July 29	2.848¢ Jan. 1
1946.... 2.848¢ Dec. 31	2.464¢ Jan. 1
1945.... 2.464¢ May 29	2.396¢ Jan. 1
1944.... 2.396¢	2.396¢
1943.... 2.396¢	2.396¢
1942.... 2.396¢	2.396¢
1941.... 2.396¢	2.396¢
1940.... 2.30467¢ Jan. 2	2.24107¢ Apr. 16
1939.... 2.35367¢ Jan. 3	2.26689¢ May 16
1938.... 2.58414¢ Jan. 4	2.27207¢ Oct. 18
1937.... 2.58414¢ Mar. 9	2.32263¢ Jan. 4
1936.... 2.32263¢ Dec. 28	2.05200¢ Mar. 10
1935.... 2.07542¢ Oct. 1	2.06492¢ Jan. 8
1932.... 1.89196¢ July 5	1.83910¢ Mar. 1
1929.... 2.31773¢ May 28	2.26498¢ Oct. 29

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Pig Iron	Sept. 5, 1950
One week ago	46.61 per gross ton
One month ago	46.61 per gross ton
One year ago	45.88 per gross ton

High	Low
1950.... 46.61 Aug. 8	45.88 Jan. 3
1949.... 46.87 Jan. 18	45.88 Sept. 6
1948.... 46.91 Oct. 12	39.58 Jan. 6
1947.... 37.98 Dec. 30	30.14 Jan. 7
1946.... 30.14 Dec. 10	25.37 Jan. 1
1945.... 25.37 Oct. 23	23.61 Jan. 2
1944.... 23.61	23.61
1943.... 23.61	23.61
1942.... 23.61	23.61
1941.... 23.61 Mar. 20	23.45 Jan. 2
1940.... 23.45 Dec. 23	22.61 Jan. 2
1939.... 22.61 Sept. 19	20.61 Sept. 12
1938.... 23.25 June 21	19.61 July 6
1937.... 32.25 Mar. 9	20.25 Feb. 16
1936.... 19.74 Nov. 24	18.73 Aug. 11
1935.... 18.84 Nov. 5	17.83 May 14
1932.... 14.81 Jan. 5	13.56 Dec. 6
1929.... 18.71 May 14	18.21 Dec. 17

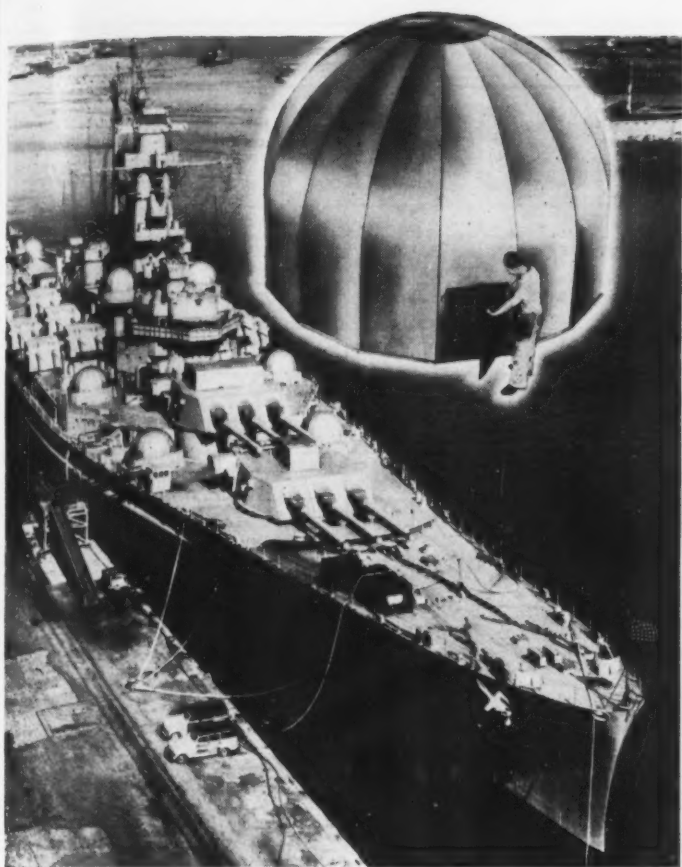
Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Scrap Steel	Sept. 5, 1950
One week ago	\$40.58 per gross ton
One month ago	40.92 per gross ton
One year ago	39.17 per gross ton

High	Low
1950.... 41.58 Aug. 22	\$26.25 Jan. 3
1949.... 43.00 Jan. 4	19.33 June 28
1948.... 43.16 July 27	39.75 Mar. 9
1947.... 42.58 Oct. 28	29.50 May 20
1946.... 31.17 Dec. 24	19.17 Jan. 1
1945.... 19.17 Jan. 2	18.92 May 22
1944.... 19.17 Jan. 11	15.76 Oct. 24
1943.... 19.17	19.17
1942.... 19.17	19.17
1941.... 22.00 Jan. 7	19.17 Apr. 10
1940.... 21.83 Dec. 30	16.04 Apr. 9
1939.... 22.50 Oct. 3	14.08 May 16
1938.... 15.00 Nov. 22	11.00 June 7
1937.... 21.92 Mar. 30	12.67 June 9
1936.... 17.75 Dec. 21	12.67 June 8
1935.... 13.42 Dec. 10	10.33 Apr. 29
1932.... 8.50 Jan. 12	6.43 July 6
1929.... 17.58 Jan. 29	14.08 Dec. 8

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Navy Foresight PAYS OFF WITH ITS CRITICAL "MOTHBALL FLEET"



AN historical example of unusual foresight has been precipitated by the Korean crisis. "Operation Mothball" has proven a priceless—yet relatively economical—investment in security insurance. It consisted of scientifically preserving, storing and strategically berthing thousands of Navy ships ready to come out fighting in from 10 to 30 days.

In this cooperative project of private industry and the Armed Forces, *Brandt of Baltimore* has been a prime contractor. A vast producer of many types of war material during World War II, Brandt has had an important part in the continued production of mothball housings to help preserve a proud fleet that's able and ready when it's so urgently needed.

BRANDT *measures up!*

BALTIMORE

... to exacting specifications for mass production of
METAL STAMPINGS
HEAVY WELDMENTS
PRESSED STEEL SHAPES

Write for file folder
No. 505 of complete
stamping facilities.



CHARLES T. BRANDT, INC.

1700 RIDGELY ST., BALTIMORE 30, MD.



IRON AGE STEEL PRICES	Smaller numbers in price boxes indicate producing companies. For main office locations, see key on facing page. Base prices at producing points apply only to sizes and grades produced in these areas. Prices are in cents per lb unless otherwise noted. Extras apply.													
	Pittsburgh	Chicago	Gary	Cleveland	Canton Massillon	Middle- town	Youngs- town	Bethle- hem	Buffalo	Conshe- hocken	Johns- town	Spar- rows Point	Granite City	Detroit
INGOTS Carbon forging, net ton	\$50.00 ¹													\$50.00 ¹¹
Alloy, net ton	\$51.00 ¹⁻¹⁷													\$51.00 ¹¹
BILLETS, BLOOMS, SLABS Carbon, rerolling, net ton	\$53.00 ¹	\$53.00 ¹	\$53.00 ¹				\$57.00 ¹³		\$53.00 ³	\$62.00 ²⁶	\$53.00 ³			
Carbon forging billets, net ton	\$63.00 ¹	\$63.00 ¹⁻⁴	\$63.00 ¹⁻⁸	\$63.00 ⁴			\$63.00 ²⁸		\$63.00 ³⁻⁴	\$68.00 ²⁶	\$63.00 ¹			\$66.00 ¹¹
Alloy, net ton	\$66.00 ¹⁻¹⁷	\$66.00 ¹⁻⁴	\$66.00 ¹		\$66.00 ⁴⁻⁴²		\$66.00 ¹³	\$66.00 ³	\$66.00 ³⁻⁴	\$70.00 ²⁶	\$66.00 ³			\$66.00 ¹¹
PIPE SKELP	3.15 ¹						3.15 ¹⁻⁴							
WIRE RODS	3.85 ²⁻¹⁸	3.85 ²⁻⁴⁻³³	3.85 ⁵	3.85 ³			3.85 ⁵				3.85 ³	3.95 ³		
SHEETS Hot-rolled (18 ga. & hvr.)	3.35 ¹⁻⁵⁻⁹⁻¹⁵	3.35 ²³	3.35 ¹⁻⁵⁻⁸	3.35 ⁴⁻⁵			3.35 ^{1-4-6-3.50¹³}		3.35 ³	3.60 ²⁶		3.35 ³		3.53 ¹² 4.18 ⁴⁷
Cold-rolled	4.10 ¹⁻⁵⁻⁷⁻⁹⁻¹⁸ 5.10 ⁵³		4.10 ¹⁻⁵⁻⁸	4.10 ⁴⁻¹⁸		4.10 ⁷	4.10 ⁴⁻⁶		4.10 ³			4.10 ³	4.30 ²³	4.30 ¹²
Galvanized (10 gage)	4.40 ¹⁻⁹⁻¹⁸		4.40 ¹⁻⁸		4.40 ⁴		4.65 ⁴⁻⁴ 4.75 ⁴⁴					4.40 ³		
Enameling (12 gage)	4.40 ¹		4.40 ¹⁻⁸	4.40 ⁴		4.40 ⁷	4.40 ⁶ 4.90 ⁷⁶						4.60 ²³	4.70 ¹²
Long ternes (10 gage)	4.80 ⁹⁻¹⁸		4.80 ¹			4.80 ⁷	4.80 ⁶⁻⁴							
Hi Str. low alloy, h.r.	5.05 ¹⁻⁵⁻⁹	5.05 ¹	5.05 ¹⁻⁵⁻⁸	5.05 ⁴⁻⁵			5.05 ¹⁻⁴⁻⁶⁻¹³		5.05 ³	5.05 ²⁶		5.05 ³		5.25 ¹²
Hi str. low alloy, c.r.	6.20 ¹⁻⁵⁻⁹		6.20 ¹⁻⁵⁻⁸	6.20 ⁴⁻⁵			6.20 ⁴⁻⁶⁻¹³		6.20 ³			6.20 ³		6.40 ¹²
Hi str. low alloy, galv.	6.75 ¹											6.75 ³		
STRIP Hot-Rolled	3.25 ^{2-7-9-3.50²⁸⁻⁴¹}	3.25 ²³⁻⁶⁶	3.25 ¹⁻⁵⁻⁸	3.25 ⁵			3.25 ^{1-4-6-3.50¹³}		3.25 ³	3.50 ²⁶		3.25 ³		3.45 ¹² 4.08 ⁴⁷
Cold-rolled	4.15 ^{2-7-9-4.50⁵³}	4.30 ⁸ 4.50 ⁵⁴	4.30 ⁸	4.15 ²⁻⁵		4.15 ⁷	4.15 ⁴⁻⁶⁻⁴⁸⁻⁴⁹ 4.50 ¹³⁻⁴⁹		4.15 ³			4.15 ³		4.35 ¹² 4.75 ⁵⁸ 4.95 ⁴⁷
Hi str. low alloy, h.r.	4.95 ⁹		4.95 ¹⁻⁵⁻⁸	4.95 ³			4.95 ¹⁻⁴⁻⁶⁻¹³		4.95 ³	4.95 ²⁶		4.95 ³		5.15 ¹²
Hi Str. low alloy, c.r.	6.20 ⁹			6.20 ²⁻⁵			6.20 ⁴⁻⁶⁻¹³		6.40 ³			6.40 ³		6.40 ¹²
TINPLATE† Coke, 1.50-lb base box 1.25 lb. deduct 20¢	\$7.50 ¹⁻⁵⁻⁹⁻¹⁸		\$7.50 ¹⁻⁵⁻⁸				\$7.50 ⁴					\$7.60 ³	\$7.70 ²³	
Electrolytic 0.25, 0.50, 0.75 lb box	Deduct \$1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price													
BLACKPLATE, 29 gage Hollowware enameling	5.30 ¹⁻⁵⁻¹⁸		5.30 ¹⁻⁶				5.30 ⁴					5.40 ³	5.50 ²³	
BARS Carbon steel	3.45 ¹⁻⁵⁻⁹	3.45 ¹⁻⁴⁻²³	3.45 ¹⁻⁵⁻⁸	3.45 ⁴	3.45 ⁴		3.45 ¹⁻⁴⁻⁶		3.45 ³⁻⁴		3.45 ³			3.65 ¹²
Reinforcing†	3.45 ¹⁻⁵	3.45 ⁴	3.45 ¹⁻⁵⁻⁸	3.45 ⁴			3.45 ¹⁻⁴⁻⁶		3.45 ³⁻⁴		3.45 ³	3.45 ³		
Cold-finished	4.10 ⁵ 4.15 ²⁻⁴⁻¹⁷⁻⁵²⁻⁵⁹⁻⁷¹	4.15 ²⁻²³⁻⁵⁹⁻⁷⁰	4.15 ⁴⁻⁷³⁻⁷⁴	4.15 ²⁻⁶¹	4.15 ⁴⁻³³⁻³³		4.15 ⁵⁻⁴⁹⁻⁵⁷		4.15 ⁷⁻⁹					4.35 ¹² 4.30 ⁴
Alloy, hot-rolled	3.95 ¹⁻¹⁷	3.95 ¹⁻⁴⁻²³	3.95 ¹⁻⁵⁻⁸		3.95 ⁴		3.95 ¹⁻⁴⁻²⁵	3.95 ³	3.95 ³⁻⁴		3.95 ³			4.25 ¹²
Alloy, cold-drawn	4.90 ²⁻¹⁷⁻⁵²⁻⁵⁹⁻⁷¹	4.90 ²⁻²³⁻⁵⁹⁻⁷⁰	4.90 ⁴⁻⁷³⁻⁷⁴	4.90 ²⁻⁶¹	4.90 ⁴⁻⁴³⁻⁴³		4.90 ⁵⁻²⁵⁻⁵⁷	4.90 ³	4.90 ³⁻⁷⁹					5.05 ⁴
Hi str. low alloy, h.r.	5.20 ¹⁻⁵		5.20 ¹⁻⁵⁻⁸	5.20 ⁴			5.20 ¹⁻⁶	5.20 ³	5.20 ³		5.20 ³			5.40 ¹²
PLATE Carbon steel	3.50 ¹⁻⁵	3.50 ¹	3.50 ¹⁻⁵⁻⁸	3.50 ⁴			3.50 ¹⁻¹³		3.50 ³	3.75 ²⁶	3.50 ³	3.50 ³		3.75 ¹²
Floor Plates	4.55 ¹	4.55	4.55 ³	4.55 ²						4.55 ²⁶				
Alloy	4.40 ¹	4.40 ¹	4.40 ¹				4.40 ¹²			4.55 ²⁶	4.40	4.40 ³		
Hi Str. low alloy	5.35 ¹⁻⁸	5.35 ¹	5.35 ¹⁻³	5.35 ⁴⁻⁵			5.35 ⁶			5.35 ²⁶	5.35 ³	5.35 ³		5.60 ¹²
SHAPES, Structural	3.40 ¹⁻⁵⁻⁹	3.40 ¹⁻²³	3.40 ¹⁻⁵⁻⁸					3.45 ³	3.45 ³		3.45 ³			
Hi Str. low alloy	5.15 ¹⁻⁸	5.15 ¹	5.15 ¹⁻⁵⁻⁸				5.15 ⁵	5.20 ³	5.20 ³		5.20 ³			
MANUFACTURERS' WIRE Bright	4.50 ²⁻⁵⁻¹⁸	4.50 ²⁻⁴⁻¹³⁻³³⁻³⁴		4.50 ²⁻⁷⁷			4.50 ⁶	Kokomo=4.60 ²⁶			4.50 ³	4.60 ³	Duluth=4.50 ³ Pueblo=4.75 ¹⁴	
PILING, Steel Sheet	4.20 ¹⁻⁹	4.20 ¹							4.20 ³					

Smaller numbers indicate producing companies. See key at right.
Prices are in cents per lb unless otherwise noted. Extras apply.

IRON AGE

STEEL PRICES

INGOTS
Carbon forging, net ton
Alloy, net ton
BILLETS, BLOOMS, SLABS
Carbon, rerolling, net ton
Carbon forging billets, net ton
Alloy net ton

PIPE SKELP

WIRE RODS

SHEETS

Hot-rolled (18 ga. & hvr.)

Cold-rolled

Galvanized (10 g. e)

Enameling (12 gage)

Long ternes (10 gage)

Hi Str. low alloy, h.r.

Hi Str. low alloy, c.r.

Hi Str. low alloy, galv.

STRIP

Hot-rolled

Cold-rolled

Hi Str. low alloy, h. r.

Hi Str. low alloy, c. r.

TINPLATE

Cokes, 1.50-lb base box
1.25 lb, deduct 20¢
Electrolytic
0.25, 0.50, 0.75 lb box

BLACKPLATE, 29 gage

Hollowware enameling

BARS

Carbon steel

Reinforcing†

Cold-finished

Alloy, hot-rolled

Alloy, cold-drawn

Hi Str. low alloy, h.r.

PLATE

Carbon steel

Floor plates

Alloy

Hi Str. low alloy

SHAPES, Structural

Hi Str. low alloy

MANUFACTURERS' WIRE

Bright

KEY TO STEEL PRODUCERS

With Principal Offices

- 1 Carnegie-Illinois Steel Corp., Pittsburgh
- 2 American Steel & Wire Co., Cleveland
- 3 Bethlehem Steel Co., Bethlehem
- 4 Republic Steel Corp., Cleveland
- 5 Jones & Laughlin Steel Corp., Pittsburgh
- 6 Youngstown Sheet & Tube Co., Youngstown
- 7 Armco Steel Corp., Middletown, Ohio
- 8 Inland Steel Co., Chicago
- 9 Weirton Steel Co., Weirton, W. Va.
- 10 National Tube Co., Pittsburgh
- 11 Tennessee Coal, Iron & R. R. Co., Birmingham
- 12 Great Lakes Steel Corp., Detroit
- 13 Sharon Steel Corp., Sharon, Pa.
- 14 Colorado Fuel & Iron Corp., Denver
- 15 Wheeling Steel Corp., Wheeling, W. Va.
- 16 Geneva Steel Co., Salt Lake City
- 17 Crucible Steel Co. of America, New York
- 18 Pittsburgh Steel Co., Pittsburgh
- 19 Kaiser Steel Corp., Oakland, Calif.
- 20 Portsmouth Div., Detroit Steel Corp., Detroit
- 21 Lukens Steel Co., Coatesville, Pa.
- 22 Granite City Steel Co., Granite City, Ill.
- 23 Wisconsin Steel Co., South Chicago, Ill.
- 24 Columbia Steel Co., San Francisco
- 25 Copperweld Steel Co., Glassport, Pa.
- 26 Alan Wood Steel Co., Conshohocken, Pa.
- 27 Calif. Cold Rolled Steel Corp., Los Angeles
- 28 Allegheny Ludlum Steel Corp., Pittsburgh
- 29 Worth Steel Co., Claymont, Del.
- 30 Continental Steel Corp., Kokomo, Ind.
- 31 Rotary Electric Steel Co., Detroit
- 32 Laclede Steel Co., St. Louis
- 33 Northwestern Steel & Wire Co., Sterling, Ill.
- 34 Keystone Steel & Wire Co., Peoria, Ill.
- 35 Central Iron & Steel Co., Harrisburg, Pa.
- 36 Carpenter Steel Co., Reading, Pa.
- 37 Eastern Stainless Steel Corp., Baltimore
- 38 Washington Steel Corp., Washington, Pa.
- 39 Jessop Steel Co., Washington, Pa.
- 40 Blair Strip Steel Co., New Castle, Pa.
- 41 Superior Steel Corp., Carnegie, Pa.
- 42 Timken Steel & Tube Div., Canton, Ohio
- 43 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
- 44 Reeves Steel & Mfg. Co., Dover, Ohio
- 45 John A. Roebling's Sons Co., Trenton, N. J.
- 46 Simonds Saw & Steel Co., Fitchburg, Mass.
- 47 McLouth Steel Corp., Detroit
- 48 Cold Metal Products Co., Youngstown
- 49 Thomas Steel Co., Warren, Ohio
- 50 Wilson Steel & Wire Co., Chicago
- 51 Sweet's Steel Co., Williamsport, Pa.
- 52 Superior Drawn Steel Co., Monaca, Pa.
- 53 Tremont Nail Co., Wareham, Mass.
- 54 Firth Sterling Steel & Carbide Corp., McKeesport, Pa.
- 55 Ingersoll Steel Div., Chicago
- 56 Phoenix Iron & Steel Co., Phoenixville, Pa.
- 57 Fitzsimmons Steel Co., Youngstown
- 58 Stanley Works, New Britain, Conn.
- 59 Universal-Cyclops Steel Corp., Bridgeville, Pa.
- 60 American Cladmetals Co., Carnegie, Pa.
- 61 Cuyahoga Steel & Wire Co., Cleveland
- 62 Bethlehem Pacific Coast Steel Corp., San Francisco
- 63 Follansbee Steel Corp., Pittsburgh
- 64 Niles Rolling Mill Co., Niles, Ohio
- 65 Atlantic Steel Co., Atlanta
- 66 Acme Steel Co., Chicago
- 67 Joslyn Mfg. & Supply Co., Chicago
- 68 Detroit Steel Corp., Detroit
- 69 Wyckoff Steel Co., Pittsburgh
- 70 Bliss & Laughlin, Inc., Harvey, Ill.
- 71 Columbia Steel & Shaffing Co., Pittsburgh
- 72 Cumberland Steel Co., Cumberland, Md.
- 73 La Salle Steel Co., Chicago
- 74 Monarch Steel Co., Inc., Hammond, Ind.
- 75 Empire Steel Co., Mansfield, Ohio
- 76 Mahoning Valley Steel Co., Niles, Ohio
- 77 Oliver Iron & Steel Co., Pittsburgh
- 78 Pittsburgh Screw & Bolt Co., Pittsburgh
- 79 Standard Forging Corp., Chicago
- 80 Driver Harris Co., Harrison, N. J.
- 81 Detroit Tube & Steel Div., Detroit
- 82 Reliance Div., Eaton Mfg. Co., Massillon, Ohio
- 83 Sheffield Steel Corp., Kansas City
- 84 Plymouth Steel Co., Detroit

Deduct \$1.15, 90¢ and 65¢ respectively from 1.50-lb coke base box price

4.05 ³	3.85 ³	3.45 ¹¹	SF, LA=4.15 ²⁴ LA=4.15 ²²	Atlanta=3.60 ³⁶
4.05 ³	3.85 ³	3.45 ¹¹	SF, S=4.20 ³² F=4.10 ¹⁹	Atlanta=3.60 ³⁶
4.55 ³	4.35 ³		LA=5.00 ³² F=4.95 ¹⁹	Putnam, Newark=4.55 ³⁹
				Newark ³⁹ , Worcester ³² =5.20 Hartford=5.20 ⁴
		5.20 ¹¹	F=6.25 ¹⁹	
3.90 ³	3.50 ¹¹		F=4.10 ¹⁹ S=4.40 ³² Geneva=3.50 ¹⁶	Claymont=3.90 ³⁹ Coatesville=3.90 ³² Harrisburg=4.25 ³⁶
			F=5.40 ¹⁹	Harrisburg=5.25 ³²
		8.35 ¹¹	F=5.95 ¹⁹	Coatesville=4.80 ³² Geneva=5.35 ¹⁶
4.00 ³	3.80 ³	3.40 ¹¹	SF=3.95 ³² LA=4.00 ²⁴ & 32	Phoenixville=4.25 ³⁶ Geneva=3.40 ¹⁶
		5.15 ¹¹	F=4.00 ¹⁹ S=4.05 ³²	Fontana=5.75 ¹⁹ Geneva=5.15 ¹⁶
5.10 ³	4.90 ³	4.50 ¹¹	SF, LA=5.45 ²⁴ & 32	Portsmouth=4.50 ³⁹ Worcester=4.80 ³²

Notes: †Special coated mfg ternes deduct \$1.15 from 1.50-lb coke base box price.
Can-making quality blackplate, 55 to 128-lb, deduct \$1.99 from 1.50-lb coke base box.
‡Straight lengths only from producer to fabricator.

STAINLESS STEELS

Base prices, in cents per pound,
f.o.b. producing point

Product	301	302	303	304	316	321	347	410	416	430
Ingot, rerolling.....	13.75	14.50	16.00	15.50	23.75	19.25	21.00	12.25	14.25	12.50
Slabs, billets, rerolling.....	16.00	19.25	21.25	20.25	31.25	25.50	27.75	16.60	19.50	16.25
Forg. discs, die blocks, rings.....	32.00	32.00	34.50	33.50	50.50	38.00	42.50	26.00	26.50	26.50
Billets, forging.....	25.75	25.75	27.75	27.00	40.50	30.50	34.25	21.00	21.50	21.50
Bars, wire, structurals.....	30.00	30.00	32.50	31.50	47.50	35.50	40.00	24.50	25.00	25.00
Plates.....	32.00	32.00	34.00	34.00	50.50	39.50	44.00	26.00	26.50	26.50
Sheets.....	39.00	39.00	41.00	41.00	54.50	47.00	51.50	34.50	35.00	37.00
Strip, hot-rolled.....	25.50	27.00	31.25	29.00	47.25	35.75	40.00	22.50	29.25	23.00
Strip, cold-rolled.....	32.00	34.50	38.00	36.50	56.50	46.00	50.00	28.50	35.00	29.00

STAINLESS STEEL PRODUCING POINTS—*Sheets*: Midland, Pa., 17; Brackenridge, Pa., 28; Butler, Pa., 7; McKeesport, Pa., 1; Washington, Pa., 33, 39; Baltimore, 37; Middletown, Ohio, 7; Massillon, Ohio, 4; Gary, 1; Bridgeville, Pa., 59; New Castle, Ind., 55; Ft. Wayne, Ind., 67; Lockport, N. Y., 46.
Strip: Midland, Pa., 17; Cleveland, 2; Carnegie, Pa., 41; McKeesport, Pa., 54; Reading, Pa., 36; Washington, Pa., 33; W. Leechburg, Pa., 28; Bridgeville, Pa., 59; Detroit, 47; Massillon, Canton, Ohio, 4; Middletown, Ohio, 7; Harrison, N. J., 80; Youngstown, 48; Lockport, N. Y., 46; New Britain, Conn., 58; Sharon, 13; Butler, Pa., 7.
Bars: Baltimore, 7; Duquesne, Pa., 1; Munhall, Pa., 1; Reading, Pa., 36; Titusville, Pa., 59; Washington, Pa., 39; McKeesport, Pa., 1, 54; Bridgeville, Pa., 59; Dunkirk, N. Y., 28; Massillon, Ohio, 4; Chicago, 1; Syracuse, N. Y., 17; Watervliet, N. Y., 28; Waukegan, Ill., 2; Lockport, N. Y., 46; Canton, Ohio, 42; Ft. Wayne, Ind., 67.
Wire: Waukegan, Ill., 2; Massillon, Ohio, 4; McKeesport, Pa., 54; Bridgeport, Conn., 44; Ft. Wayne, Ind., 67; Trenton, N. J., 45; Harrison, N. J., 80; Baltimore, 7; Dunkirk, 28.
Structurals: Baltimore, 7; Massillon, Ohio, 4; Chicago, 1, 67; Watervliet, N. Y., 28; Bridgeport, Conn., 44.
Plates: Brackenridge, Pa., 28; Butler, Pa., 7; Chicago, 1; Munhall, Pa., 1; Midland, Pa., 17; New Castle, Ind., 55; Lockport, N. Y., 46; Middletown, 7; Washington, Pa., 39; Cleveland, Massillon, 4.
Forged discs, die blocks, rings: Pittsburgh, 1, 17; Syracuse, 17; Ferndale, Mich., 28.
Forging billets: Midland, Pa., 17; Baltimore, 7; Washington, Pa., 39; McKeesport, 54; Massillon, Canton, Ohio, 4; Watervliet, 28; Pittsburgh, Chicago, 1.

ELECTRICAL SHEETS

22 gage, HR cut lengths, f.o.b. mill

	Cents per lb.
Armature.....	6.20
Electrical.....	6.70
Motor.....	7.95
Dynamo.....	8.75
Transformer 72.....	9.30
Transformer 65.....	9.85
Transformer 58.....	10.55
Transformer 52.....	11.35

PRODUCING POINTS—Beech Bottom, W. Va., 15; Brackenridge, Pa., 28; Follansbee, W. Va., 63; Granite City, Ill., 22; add 0.20¢; Indiana Harbor, Ind., 8; Mansfield, Ohio, 75; Niles, Ohio, 64, 76; Vandergrift, Pa., 1; Warren, Ohio, 4; Zanesville, Ohio, 7.

MERCHANT WIRE PRODUCTS

	Base Column Pittsburg, Calif.
To dealers, f.o.b. mill	
Standard & coated nails* 106	125 1/2
Woven wire fence† 116	139
Fence posts, carloads†† 116	...
Single loop bale ties... 113	137
Galvanized barbed wire** 126	146
Twisted barbed wire... 126	146

* Fgh, Chl, Duluth; Worcester, 6 columns higher; Houston, 8 columns higher; Kansas City, 12 columns higher. † 15 1/2 gage and heavier. ** On 80 rod spools, in carloads. †† Duluth, Joliet; Johnstown, 112.

	Base per 100 lb	Pittsburg, Calif.
Merch. wire annealed†. \$5.35	\$6.30	
Merch. wire, galv.†... 5.60	6.55	
Cut nails, carloads††. 6.75	...	

† Add 30¢ at Worcester; 20¢ at Chicago; 10¢ at Sparrows Pt.
†† Less 20¢ to jobbers.
‡ Torrance 126.

PRODUCING POINTS—Standard, Coated or galvanized nails, woven wire fence, bale ties, and barbed wire: Alabama City, Ala., 4; Atlanta, 65; Alliquippa, Pa., (except bale ties), 5; Bartonville, Ill. (except bale ties), 34; Chicago, 4; Donora, Pa., 2; Duluth, 2; Fairfield, Ala., 11; Johnstown, Pa. (except bale ties), 3; Joliet, Ill., 2; Kokomo, Ind., 30;

Minnequa, Colo., 14; Monessen, Pa. (except bale ties), 18; Pittsburgh, Calif., 24; Portsmouth, Ohio, 20; Rankin, Pa. (except bale ties), 2; Sparrows Point (except woven fence), 3; Sterling, Ill., 33; San Francisco (except nails and woven fence), 14; Torrance, Calif. (nails only), 24; Worcester (nails only), 2; Houston (except bale ties), 83; Kansas City, 83.

Fence Posts: Duluth, 2; Johnstown, Pa., 3; Joliet, Ill., 2; Minnequa, Colo., 14; Moline, Ill., 4; Williamsport, Pa., 51.

Cut nails: Wheeling, W. Va., 15; Conshohocken, Pa., 26; Warehame, Mass., 53.

RAILS, TRACK SUPPLIES

	F.o.b. mill
Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb.....	\$3.40
Joint bars, per 100 lb.....	4.40
Light rails, per 100 lb.....	3.75

	Base Price cents per lb
Track spikes†.....	5.60
Axles.....	5.25
Screw spikes.....	8.60
Tie plates.....	4.20
Pittsburg, Torr., Calif.; Seattle... 4.35	
Track bolts, untreated.....	8.85
Track bolts, heat treated, to rail- roads.....	9.10

† Kansas City, 5.85¢.

PRODUCING POINTS—Standard rails: Bessemer, Pa., 1; Ensley, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Minnequa, Colo., 14; Steelton, 3.

Light rails: All the above except Indiana Harbor and Steelton, plus Fairfield, Ala., 11; Johnstown, 3; Minnequa, 14.

Joint bars: Bessemer, Pa., 1; Fairfield, Ala., 11; Indiana Harbor, Ind., 8; Joliet, Ill., 1; Lackawanna, N. Y., 3; Steelton, Pa., 3; Minnequa, Colo., 14.

Track spikes: Indiana Harbor, Ind., 6, 8; Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 5; Chicago, 4; Struthers, 6; Youngstown, 4.

Track bolts: Lebanon, Pa., 3; Minnequa, Colo., 14; Pittsburgh, 77, 78.

Axles: Indiana Harbor, Ind., 79; Johnstown, Pa., 3.

Tie plates: Fairfield, Ala., 11; Gary, 1; Indiana Harbor, Ind., 8; Lackawanna, N. Y., 3; Pittsburgh, Calif., 24; Seattle, 62; Steelton, Pa., 3; Torrance, Calif., 24; Minnequa, Colo., 14.

Numbers after producing points
correspond to steel producers.
See key on Steel Price page.

PIPE AND TUBING

Base discounts, f.o.b. mills
Base price about \$200.00 per net ton

Standard, T & C

Steel, Butt weld*	Black	Galv
1/2-in.	40 1/2 to 38 1/2	21 to 19
3/4-in.	43 1/2 to 41 1/2	25 to 23
1-in.	46 1/2 to 44 1/2	28 to 26
1 1/4-in.	46 1/2 to 44 1/2	28 1/2 to 26 1/2
1 1/2-in.	47 to 45	29 to 27
2-in.	47 1/2 to 45 1/2	29 1/2 to 27 1/2
2 1/2 to 3-in.	48 to 46	30 to 28

Steel, lap weld		
2-in.	38	19 1/2
2 1/2 to 3-in.	42	23 1/2
3 1/2 to 6-in.	43 to 40	24 1/2 to 21 1/2

Steel, seamless		
2-in.	36	17 1/2
2 1/2 to 3-in.	39	20 1/2
3 1/2 to 6-in.	41	22 1/2

Wrought iron, butt weld		
1/2-in.	+26 1/2	+56
3/4-in.	+16 1/2	+46
1 & 1 1/4-in.	+10 1/2	+36
1 1/2-in.	+4 1/2	+32 1/2
2-in.	+4	+32

Wrought iron, lap weld		
2-in.	+13 1/2	+40
2 1/2 to 3 1/2-in.	+11	+35 1/2
4-in.	+6	+29 1/2
4 1/2 to 8-in.	+8	+31
9 to 12-in.	+18	+40 1/2

Extra Strong, Plain Ends

Steel, butt weld		
1/2-in.	39 1/2 to 37 1/2	21 1/2 to 19 1/2
3/4-in.	43 1/2 to 41 1/2	25 1/2 to 23 1/2
1-in.	46 1/2 to 44 1/2	28 1/2 to 26 1/2
1 1/4-in.	46 to 44	29 to 27
1 1/2-in.	46 3/4 to 44 3/4	29 1/2 to 27 1/2
2-in.	47 to 45	30 to 29
2 1/2 to 3-in.	47 1/2 to 45 1/2	30 1/2 to 28 1/2

Steel, lap weld		
2-in.	37	19 1/2
2 1/2 to 3-in.	42	24 1/2
3 1/2 to 6-in.	44 1/2 to 41 1/2	27 to 24

Steel, seamless		
2-in.	35	17 1/2
2 1/2 to 3-in.	38	21 1/2
3 1/2 to 6-in.	42 1/2	25

Wrought iron, butt weld		
1/2-in.	+22	+50
3/4-in.	+15 1/2	+43
1 to 2 in.	+5 1/2	+32

Wrought iron, lap weld		
2-in.	+10 1/2	+36 1/2
2 1/2 to 4-in.	+1	+25
4 1/2 to 6-in.	+5	+29 1/2
7 & 8-in.	1st	+24 1/2
9 to 12-in.	+11 1/2	+32 1/2

For threads only, butt weld, lap weld and seamless pipe, one point higher discount (lower price) applies. For plain ends, butt weld, lap weld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lap weld and seamless 3 1/2-in. and larger four points higher discount (lower price) applies. On butt weld lap weld steel pipe, jobbers are granted a discount of 5 pct. * Fontana, Calif., deduct 11 points from figures in left columns.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut lengths 10 to 24 ft inclusive.

OD	gauge	Seamless	Electric	Weld	
in in.	BWG	H.R.	H.R.	C.D.	
2	13	\$20.61	\$24.24	\$19.99	23.51
2½	12	27.71	32.58	26.88	31.60
3	12	30.82	36.27	29.90	35.18
3½	11	38.52	45.38	37.36	43.99
4	10	47.82	56.25	46.39	54.54

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, dollars per 100 lb.
(Metropolitan area delivery, add 20¢ to base price except Birmingham, San Francisco, Cincinnati, New Orleans, St. Paul (*), add 15¢; Philadelphia, add 25¢).

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (16 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4148 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4148 Ann.
Baltimore.....	5.15	6.30 ¹	6.55 ²	5.59-5.59 ¹¹	....	5.40-5.04 ¹¹	5.69	5.59	6.19	9.69	9.99	11.12	11.49
Birmingham*.....	5.15 ¹⁰	5.95	6.18 ⁷	5.10	....	5.40	5.25	5.10	6.88	....	....	....	....
Boston.....	5.75	6.59 ¹⁰	6.94 ⁸	5.70	6.90-7.14	6.08	5.75	5.60	6.19-6.69	9.70-9.97	8.50-10.00	11.15	11.45
Buffalo.....	5.15	5.95	6.94	5.41	7.27	5.65	5.35	5.15	5.75	9.80	9.90	11.05	11.35
Chicago.....	5.15	6.20	6.85	5.10	6.30	5.40	5.25	5.10	5.65	9.25	9.55	10.70	11.00
Cincinnati*.....	5.42-5.97	5.99-6.24	6.39	5.35	....	5.79	5.64	5.35-5.54	5.96-6.25	9.60-9.81	9.90-10.11	11.05-11.28	11.35-11.60
Cleveland.....	5.15	5.95	7.00-7.10	5.24	6.35	5.52	5.37	5.12	5.75	9.38	9.68	10.81	11.11
Detroit.....	5.33	6.08-6.33	7.09	5.49	6.43-6.80	5.59	5.64-5.79	5.39	5.91	9.58	9.88	11.01	11.31
Houston.....	6.00	....	....	6.10	....	6.00	5.95	6.10	7.80	10.35-10.45	10.50-10.60	11.50	11.95
Indianapolis.....	....	....	....	....	7.38	....	....	....	6.15	....	....	....	....
Kansas City.....	5.75	6.55	7.45	5.70	6.95	6.00	5.85	5.70	6.35	9.85	10.15	11.30	11.60
Los Angeles.....	5.90	7.45	8.00 ⁹	5.95	8.70 ¹⁰	6.00	5.90	5.90	7.55	10.75	10.75	12.45	12.75
Memphis.....	5.93	6.68	....	5.98	6.80-8.51	6.08	5.93	5.68	6.51	....	....	....	....
Milwaukee.....	5.29	6.09	6.94-6.99	5.24	6.32	5.54	5.39	5.24	5.89	9.39	9.69	10.84	11.14
New Orleans*.....	5.50 ¹	6.75	....	5.55 ¹	6.80	5.65	5.55 ¹	5.55 ¹	6.75	....	....	....	....
New York.....	5.55	6.85 ¹	7.20 ⁸	5.84	6.90 ¹	5.90	5.65	5.75	6.80	9.60	9.90	11.05	11.35
Norfolk.....	6.10 ¹³	7.00	....	6.30 ¹³	....	6.15 ¹³	6.20 ¹³	6.15 ¹³	7.20 ¹³	....	....	....	....
Philadelphia*.....	6.05	6.20-6.35	6.85 ¹	5.65	6.29	5.65	5.45	5.60	6.21	9.35	9.65	10.80	11.10
Pittsburgh.....	5.15	5.95	6.60	5.20	5.95-6.00	5.35	5.25	5.10	5.75	9.25	9.55	10.70	11.00
Portland.....	6.60-7.10 ¹	8.40 ²	....	6.85 ⁹	....	6.40 ⁹	6.50	6.45-6.45 ⁹	8.60 ¹⁴	12.00 ¹⁵	11.60 ¹⁵	....	....
Salt Lake City.....	5.85	6.70	....	7.45	8.75	6.10 ³	5.90	7.35 ⁴	8.75	....	....	....	....
San Francisco*.....	6.20	7.60 ³	7.65 ³	6.15	7.85 ¹⁴	6.10	6.00	6.00	7.55	10.75	10.75	12.45	12.75
Seattle.....	6.60 ⁴	8.15 ²	8.40 ²	6.85 ⁴	....	6.35 ⁴	6.20 ⁴	6.35 ⁴	8.50 ¹⁴	....	11.60 ¹⁵	....	13.60 ¹⁵
St. Louis.....	5.48	6.28	7.18	5.43	....	5.73	5.58	5.43	6.08	9.58	9.88	11.03	11.33
St. Paul*.....	5.71	6.51	7.41	5.66	6.16-6.82	5.96	5.81	5.66	6.31	9.81	10.11	11.26	11.56

BASE QUANTITIES: (Standard unless otherwise keyed on prices.)

Hot-rolled sheets and strip, hot rolled bars and bar shapes, structural shapes, plate, galvanized sheets and cold-rolled sheets: 2000 to 9999 lb. Cold-finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb.

All HR products may be combined to determine quantity bracket. All galvanized sheets may be combined to determine quantity bracket. CR sheets may not be combined with each other or with aliv. sheets to determine quantity bracket.

Exceptions:

(1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 to 5999 lb; (6) 1000 lb and over; (7) 500 to 1499 lb; (8) 400 lb and over; (9) 400 to 9999 lb; (10) 500 to 9999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1600 lb and over; (15) 1000 to 9999 lb; (16) 6000 lb and over; (17) up to 1999 lb; (18) 1000 to 4999 lb; (19) 1500 to 3499 lb; (20) CR sheets may be combined for quantity; (21) 3 to 24 bundles.

PIG IRON PRICES

Dollars per gross ton. Delivered prices do not include 3 pct tax on freight.

PRODUCING POINT PRICES						DELIVERED PRICES (BASE GRADES)							
Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Producing Point	Rail Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	48.00	48.50	49.00	49.50	.....	Boston	Everett	\$0.50 Arb.	.....	50.50	51.00	.....	.....
Birmingham	41.88	42.38	.....	.....	.....	Boston	Steelton	6.90	.....	.....	.....	.....	50.90
Buffalo	46.00	46.50	47.00	.....	.....	Brooklyn	Bethlehem	4.20	.....	52.79	53.29	53.79	.....
Chicago	46.00	46.50	46.50	47.00	.....	Cincinnati	Birmingham	6.70	48.58	49.08	.....	.....	.....
Cleveland	46.00	46.50	46.50	47.00	51.00	Cincinnati	Bethlehem	2.63	.....	51.13	51.63	52.13	.....
Dainperfield, Tex.	41.50	42.00	42.00	.....	.....	Jersey City	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Duluth	46.00	46.50	46.50	47.00	.....	Los Angeles	Cleveland-Toledo	3.33	49.33	49.83	49.83	50.33	54.33
Erie	46.00	46.50	46.50	47.00	.....	Manfield	Bethlehem	2.39	50.39	50.89	51.39	51.89	.....
Everett	.....	50.50	51.00	.....	.....	Philadelphia	Swedeland	1.44	51.44	51.94	52.44	52.94	.....
Granite City	47.90	48.40	48.90	.....	.....	Philadelphia	Steelton	3.09	51.09	51.59	52.09	52.59	57.09
Ironton, Utah	46.00	46.50	.....	.....	.....	Rochester	Buffalo	2.63	48.63	49.13	49.63	.....	.....
Pittsburgh	46.00	46.50	46.50	47.00	.....	San Francisco	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
.....	51.00	49.50	49.50	50.00	.....	Seattle	Geneva-Ironton	7.70	53.70	54.20	.....	.....	.....
Geneva, Utah	46.00	46.50	.....	.....	.....	St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	.....
Sharpsville	46.00	46.50	46.50	47.00	.....	Syracuse	Buffalo	3.58	49.58	50.08	50.58	.....	.....
Steelton	46.00	48.50	49.00	49.50	54.00	.....	.....	.....	.....	.....	.....	.....	.....
Struthers, Ohio	46.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Swedeland	50.00	50.50	51.00	51.50	.....	.....	.....	.....	.....	.....	.....	.....	.....
Toledo	46.00	46.50	46.50	47.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
Troy, N. Y.	46.00	46.50	49.00	.....	54.00	.....	.....	.....	.....	.....	.....	.....	.....
Youngstown	46.00	46.50	46.50	47.00	.....	.....	.....	.....	.....	.....	.....	.....	.....

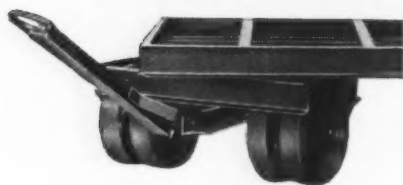
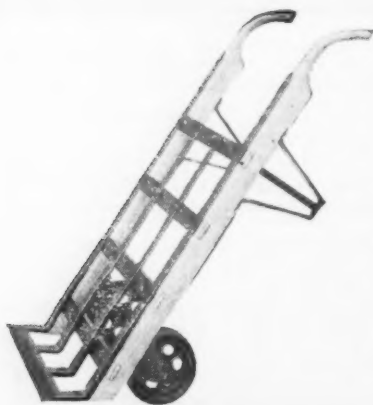
Producing point prices are subject to switching charges; silicon differential (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct for foundry iron); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differential, a charge not to exceed 50¢ per ton for each 0.50 pct manganese

content in excess of 1.00 pct. \$2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and \$1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.01 to 6.50 pct C/L per g.t., f.o.b. Jackson, Ohio—\$57.00; f.o.b. Buffalo, \$58.25. Add \$1.00 per ton for each additional 0.50 pct \$1 up to 17 pct.

Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add \$1.00 per ton for 0.75 pct or more P. Bessemer ferro-silicon prices are \$1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus \$60.00 per gross ton, f.o.b. Lyle, Tenn. Delivered Chicago, \$68.50. High phosphorus charcoal pig iron is not being produced.



up to 50 ton capacity

Built with 80 years of skill by pioneers in the industry. Over a hundred standard two, four, and fifth wheel trucks and trailers. Special units designed and built to your specification. Complete engineering service.

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Firm _____

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City & State _____

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794 Congress St., Columbus 16, O.

IRON AGE FOUNDED 1885

MARKETS & PRICES

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts, f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)
Base discount

Machine and Carriage Bolts

	Pct Off List	Less	Case C.
1/2 in. & smaller x 6 in. & shorter	27	38	
9/16 & 5/8 in. x 6 in. & shorter...	29	40	
3/4 in. & larger x 6 in. & shorter...	26	37	
All diam, longer than 6 in.	22	34	
Lag, all diam, longer than 6 in.	28	39	
Lag, all diam x 6 in. & shorter...	30	41	
Plow bolts	40	—	

Nuts, Cold Punched or Hot Pressed

(Hexagons or Square)

1/2 in. and smaller	25	37
9/16 to 3/4 in.	23	35
3/4 to 1 1/2 in. inclusive	23	35
1 1/2 in. and larger	16	29

Semifinished Hexagon Nuts

(Less case lots)

	Pct Off List	Reg	Hvy	Lt
1/2 in. and smaller	41	35	41	
9/16 to 3/4 in.	36	30	36	
3/4 to 1 1/2 in.	31	27	33	
1 1/2 in. and larger	21	17	..	

In full case lots, 15 pct additional discount.

Stove Bolts

	Pct Off List
Packaged, steel, plain finish...	63
Packaged, plated finish	50
Bulk, plain finish	69*

* Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

** Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Large Rivets

(1/2 in. and larger)
Base per 100 lb

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham, Lebanon, Pa. \$7.25

Small Rivets

(7/16 in. and smaller)

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham

Cap and Set Screws

(In bulk)	Pct Off List
Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 3/4 in. x 6 in., SAE 1020, bright	60
1/4 in. through 3/4 in. x 6 in. and shorter high C heat treated	54
Milled studs	23
Flat head cap screws, listed sizes	24
Fillister head cap, listed sizes	43
Set screws, sq head, cup point, 1 in. diam and smaller x 6 in. and shorter	59

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.50¢
0.41 to 0.60 carbon	5.95¢
0.61 to 0.80 carbon	6.55¢
0.81 to 1.05 carbon	8.50¢
1.06 to 1.35 carbon	10.80¢

Worcester, add 0.30¢.

LAKE SUPERIOR ORES

(51.50% Fe; natural content, delivered lower lake ports)

	Per gross ton
Old range, bessemer	\$8.10
Old range, nonbessemer	7.95
Mesabi, bessemer	7.85
Mesabi, nonbessemer	7.70
High phosphorus	7.70

After Jan. 25, 1950, increases or decreases in Upper Lake rail freight, dock handling charges and taxes are for buyers' account.

LARGE CUT GEARS



Cutting three identical spur gears simultaneously at Simonds Gear.

Cut Gears for Industrial Needs!

For special gears in larger sizes—exact duplicate gears for replacements—for every heavy-duty industrial gear application—look to SIMONDS GEAR where specialty gears for heavy industry have been a custom service for more than 50 years. Within easy shipping distance of many heavy industry plants—with a personalized service designed to meet your most exacting specifications—SIMONDS GEAR provides an unusually prompt and efficient service on even the most unusual gear requirements. Sizes range up to 145" dia. in all popular gear-making materials. Send your inquiry today and get acquainted with SIMONDS GEAR Service.

SPUR GEARS

BEVEL GEARS • MITRE GEARS

WORMS • WORM GEARS

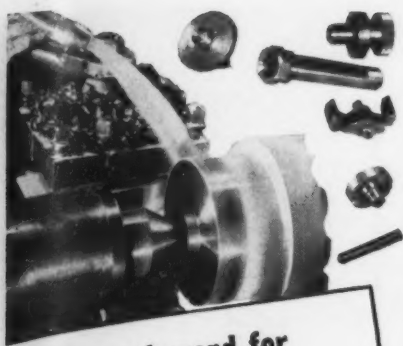
RACKS • PINIONS



Stock carrying distributors for Ramsey Silent Chain Drives and Couplings, V-Belts.

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GEAR & MFG. CO.

LIBERTY at 25TH PITTSBURGH 22, PA.



the demand for
**HIGHER
PRODUCTION**
calls for more attention
to *Cutting Fluids*

★ **PRODUCTION INCREASED FROM 18 TO 31 PIECES PER HOUR** machining pipe union from 18-8 stainless steel in single spindle automatic after changing over to Stuart's THREDKUT 99.

★ **SPEEDS, FEEDS INCREASED 50%** turning, drilling, facing, reaming, tapping forged steel valve bodies (equivalent SAE 1315) on turret lathe after applying Stuart's SOLVOL water soluble cutting fluid concentrate. And, excessive scrap loss due to high finish requirements was eliminated.

★ **PRODUCTION DOUBLED** boring 7½" dia. hole through 11" dia. x 30½" long solid forged 5060 steel pump liner through use of Stuart's SPEEDKUT B the multi-purpose cutting fluid.

* These are not isolated examples of how Stuart can help boost production. They are taken from daily field reports. Ask to have a Stuart Representative call. Send for your copy of "CUTTING FLUID FACTS."

D.A. Stuart Oil Co.

2737 S. Troy Street, Chicago 23, Ill.

IRON AGE MARKETS & PRICES

ELECTRODES

Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb
GRAPHITE		
17, 18, 20	60, 72	17.00¢
8 to 16	48, 60, 72	17.00¢
7	48, 60	18.64¢
6	48, 60	19.95¢
4, 5	40	20.43¢
3	40	21.53¢
2½	24, 30	23.05¢
2	24, 30	24.15¢

CARBON		
40	100, 110	7.65¢
35	65, 110	7.65¢
30	65, 84, 110	7.65¢
24	72 to 104	7.65¢
20	84, 90	7.65¢
17	60, 72	7.65¢
14	60, 72	8.16¢
10, 12	60	8.42¢
8	60	8.67¢

CLAD STEEL

Base prices, cents per pound, f.o.b. mill

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa. (21)...	*28.00	
Washgtn, Pa. (39)....	*28.00	
Claymont, Del. (29)...	*26.50	
Conshohocken, Pa. (26)		*24.00
New Castle, Ind. (55)...	*26.50	*25.50
Nickel-carbon		
10 pct, Coatesville (21)...	31.00	
Inconel-carbon		
10 pct, Coatesville (21)...	39.00	
Monel-carbon		
10 pct, Coatesville (21)...	32.00	
No. 302 Stainless-copper-stainless, Carnegie, Pa. (60)		75.00
Aluminized steel sheets, hot dip, Butler, Pa. (7).....		7.75

* Includes annealing and pickling, or sandblasting.

TOOL STEEL

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.00
18	4	1	—	—	\$1.565
18	4	2	—	—	\$1.13
1.5	4	1.5	8	—	71.5¢
6	4	2	6	—	76.5¢
High-carbon-chromium					57.5¢
Oil hardened manganese					32¢
Special carbon					29.5¢
Extra carbon					24.5¢
Regular carbon					21¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

COKE

Furnace, beehive (f.o.b. oven)	Net Ton
Connellsville, Pa.	\$14.00 to \$14.50
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	\$16.00 to \$16.50
Foundry, oven coke	
Buffalo, del'd	\$24.00
Chicago, f.o.b.	21.00
Detroit, f.o.b.	21.65
New England, del'd	23.40
Seaboard, N. J., f.o.b.	22.00
Philadelphia, f.o.b.	21.25
Swedeland, Pa., f.o.b.	21.20
Palmsville, Ohio, f.o.b.	21.50
Erie, del'd	\$21.04 to 21.25
Cleveland, del'd	22.62
Cincinnati, del'd	22.71
St. Paul, f.o.b.	21.00
St. Louis, del'd	22.18
Birmingham, del'd	20.20

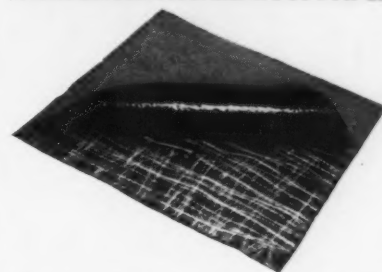
FLUORSAPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill. Base price, per ton net; Effective CaF₂ content:
70% or more \$39.00
60% or less 36.00

Prices Continued on Page 168

IT PAYS TO PACKAGE YOUR PRODUCTS IN FIBREEN

REINFORCED WATERPROOF PAPER



FIBREEN is the No. 1 wrapping material for complete protection of your shipments of steel sheets, metal parts and assemblies, or finished products. Only in FIBREEN will you find all of these essential protective qualities:

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from business givers:**

"We wish to advise that our customers indicate the Mission Pak boxes we had ordered sent to them for Christmas were "Out of this World." They all have had the highest praise for them. Thought you would appreciate having this favorable report."

Mr. P.O., South Bend, Indiana

**YOURS FREE—
MAIL TODAY**

(Please attach to your business letterhead)

Send me full-color catalog of Gifts that
are Remembered—by Mission Pak of
California. No charge

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Company _____

Address _____

City _____ Zone _____ State _____

MAIL TO: Mission Pak, 124 E. 33rd St.
Los Angeles 11, California**IRON AGE** **MARKETS & PRICES**
FOUNDED 1855**REFRACTORIES**

(F.o.b. works)
Fire Clay Brick Carloads, Per 1000
First quality, Ill., Ky., Md., Mo., Ohio, Pa.
(except Salina, Pa., add \$5).....\$86.00
No. 1 Ohio.....80.00
Sec. quality, Pa., Md., Ky., Mo., Ill. 80.00
No. 2 Ohio.....72.00
Ground fire clay, net ton, bulk (ex-
cept Salina, Pa., add \$1.50)..... 14.00

Silica Brick

Mt. Union, Pa., Ensley, Ala.....\$86.00
Childs, Pa.90.00
Hays, Pa.91.00
Chicago District95.00
Western Utah and Calif.101.00
Super Duty, Hays, Pa., Athens,
Tex., Chicago106.00
Silica cement, net ton, bulk, East-
ern (except Hays, Pa.) 15.00
Silica cement, net ton, bulk, Hays,
Pa.17.00
Silica cement, net ton, bulk, Ensley,
Ala.16.00
Silica cement, net ton, bulk, Chi-
cago District16.00
Silica cement, net ton, bulk, Utah
and Calif.22.50

Chrome Brick

Per Net Ton
Standard chemically bonded, Balt.,
Chester\$72.00

Magnesite Brick

Standard, Baltimore\$94.00
Chemically bonded, Baltimore 83.00

Grain Magnesite

St. 3/4-in. grains
Domestic, f.o.b. Baltimore,
in bulk fines removed...\$56.00 to \$57.00
Domestic, f.o.b. Chewelah, Wash.,
in bulk 33.00
in sacks 28.00

Dead Burned Dolomite

F.o.b. producing points in Pennsyl-
vania, West Virginia and Ohio,
per net ton, bulk Midwest, add
10¢; Missouri Valley, add 20¢....\$13.00

METAL POWDERS

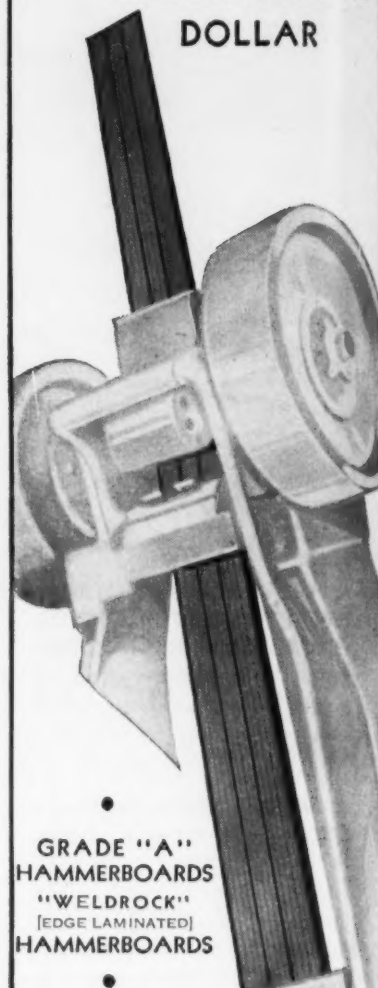
Per pound, f.o.b. shipping point, in ton
lots, for minus 100 mesh.

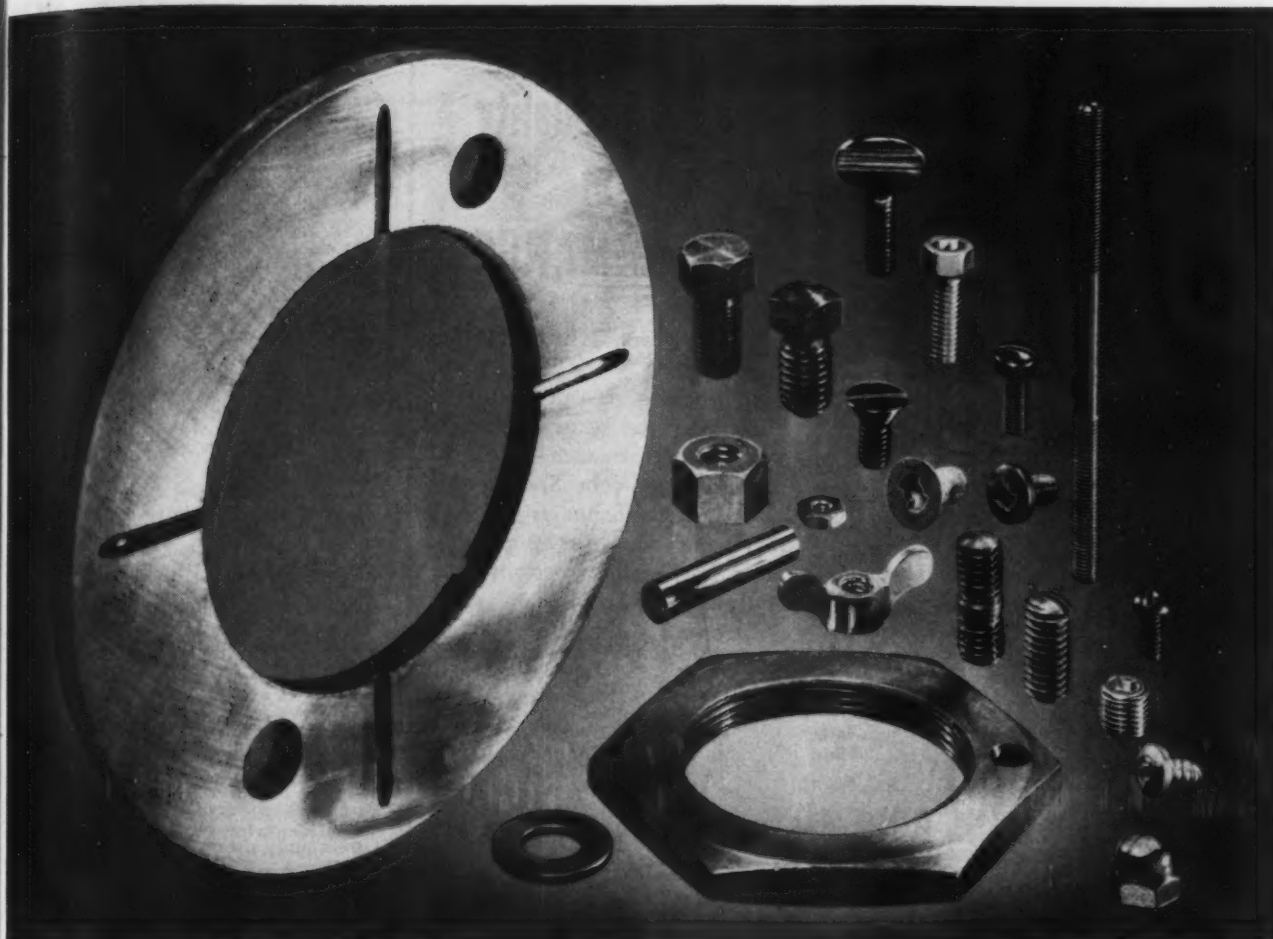
Swedish sponge iron c.i.f.
New York, ocean bags... 7.4¢ to 9.0¢
Canadian sponge iron, del'd,
in East 10.00¢
Domestic sponge iron, 98+ %
Fe, carload lots..... 9.0¢ to 15.0¢
Electrolytic iron, annealed,
99.5+ % Fe 36.0¢ to 39.5¢
Electrolytic iron unannealed,
minus 325 mesh, 99+ % Fe 48.5¢
Hydrogen reduced iron, mi-
nus 300 mesh, 98+ % Fe.. 63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10
micron, 98%, 99.8+ % Fe 70.0¢ to \$1.35
Aluminum 39.00¢
Brass, 10 ton lots 27.75¢ to 31.25¢
Copper, electrolytic. 9.25¢ plus metal value
Copper, reduced ... 9.75¢ plus metal value
Cadmium, 100-199 lb \$2.95
Chromium, electrolytic, 99%
min., and quantity..... \$3.50
Lead 6.5¢ plus metal value
Manganese 52.00¢
Molybdenum, 99% \$2.65
Nickel, unannealed 75.5¢
Nickel, annealed 81.5¢
Nickel, spherical, unannealed 78.5¢
Silicon 34.00¢
Solder powder. 6.5¢ to 8.5¢ plus met. value
Stainless steel, 302 75.00¢
Tin 11.00¢ plus metal value
Tungsten, 99% \$2.90
Zinc, 10 ton lots 20.50¢ to 23.85¢

CAST IRON WATER PIPE

Per net ton
6 to 24-in., del'd Chicago...\$91.80 to \$95.30
6 to 24-in., del'd N. Y.... 91.00 to 92.00
6 to 24-in., Birmingham... 78.00 to 82.50
6-in. and larger, f.o.b. cars, San
Francisco, Los Angeles, for all
rail shipment; rail and water
shipment less\$108.50 to \$113.00
Class "A" and gas pipe, \$5 extra; 4-in
pipe is \$5 a ton above 6-in.

Prices Continued on Page 170

IRWIN**MORE FORGINGS
per
HAMMERBOARD
DOLLAR****GRADE "A"
HAMMERBOARDS
"WELDRACK"
[EDGE LAMINATED]
HAMMERBOARDS****RELEASE PINS
HELVES**Anything required in
quantity from
Pennsylvania's
hard woods—
maple and cherry**IRWIN**
50 YEARS
of Quality**IRWIN****MANUFACTURING CO., INC.
GARLAND, PA.***Distributed by***JOHN H. SIPCHEN CO.**
549 Washington Blvd., Chicago, Ill.**FRANK G. SHAUB**
14456 Scripps Ave., Detroit, Mich.**BRETT'S PATENT LIFTER CO., LTD.**
Folshill Works • Coventry, England



STAMPINGS

From Our Pressed Metal Products Plant



In addition to CLUTCH HEADS and a complete family of cold headed fasteners. **WE SPECIALIZE IN WASHERS, SHIMS AND BLANKS** from $\frac{1}{8}$ " in diameter to 13" inclusive... produced from .002" to $1\frac{1}{4}$ " thick material.

Thus, with long experience and adequate equipment, **HOLES OF NEARLY EVERY CONCEIVABLE SIZE AND SHAPE** can be held to either commercial or very exacting limits from **STOCK TOOLS**.

Among services not usually offered by stamping plants is United's extended use of secondary operations... combining up-to-the-minute heat treating and machining operations with volume production facilities for grinding, tapping and related processing refinements.

For important cost advantages, consider the re-design of your present screw machine, forged, cast or molded parts to the use of flat, formed or extruded stampings.

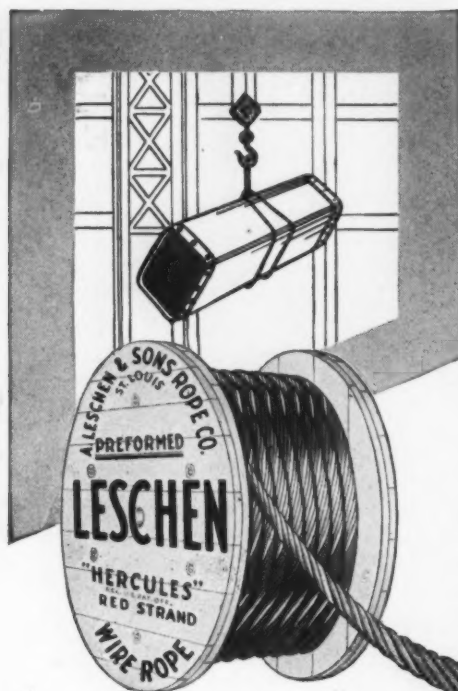
WE AIM TO CARRY THE MID-WEST'S LARGEST STOCK OF SHEET, STRIP AND PLATE IN LOW AND HIGH CARBON STEEL... ALSO IN ALLOYS

UNITED SCREW AND BOLT CORPORATION

CLEVELAND 2

CHICAGO 8

NEW YORK 7



The Proof of Quality Is in PERFORMANCE

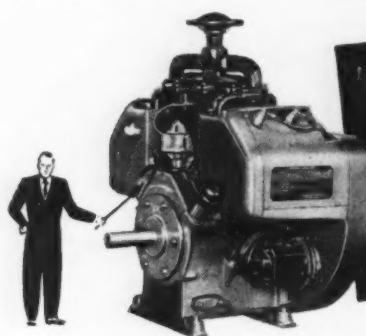
For many years, "HERCULES" (Red-Strand) Wire Rope has been proving its outstanding quality by the accurate yardstick of performance—on all sorts of tough jobs. Such consistent performance is not a matter of chance. Design... rigid tests and inspections... equipment... firm standards—are essential factors.

We invite
Your
Inquiries

A. LESCHEN & SONS ROPE CO. 5909 KENNERLY AVE. • ST. LOUIS, MO.

ESTABLISHED 1857

New York 6 Houston 3 San Francisco 7
Chicago 7 Denver 2 Portland 9
Birmingham 6 Los Angeles 21 Seattle 4

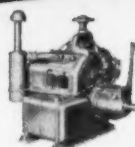


Why **WISCONSIN**
FOUR-CYLINDER
Air-Cooled **ENGINES**
ARE ALL V-TYPE

1. V-type design provides a more compact power package for easier, more adaptable installation on original equipment.
2. V-type design means lighter weight, adding to ease of handling and mobility.
3. V-type design provides most efficient air cooling—the air blast travels only half as far as required for a 4-cylinder "straight-in-line" engine.
4. More uniform cooling of V-type engines assures more economical and smoother engine performance; lower maintenance cost; longer engine life.
5. V-type cylinders are cast in pairs, 2 cylinders to a block, thus greatly reducing replacement cost if and when that should be necessary and simplifying servicing.

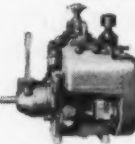
Wisconsin V-type 4-cylinder design is typical of the advanced engineering know-how that goes into all Wisconsin Engines... 4-cycle single cylinder, 2-cylinder and 4-cylinder models, in a complete power range from 3 to 30 hp. Write for detailed data.

V
VE-4



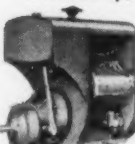
15 to 21.5 hp.

V
VF-4



17.5 to 25 hp.

V
VP-4



26.8 to 31 hp.

MOST
H.P. HOURS



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46 WISCONSIN

IRON AGE MARKETS & PRICES FOUNDED 1855

FERROALLOYS

Ferromanganese

78-82% Mn. maximum contract basis price, gross ton, lump size.
F.o.b. Birmingham \$174
F.o.b. Niagara Falls, Alloy, W. Va., Welland, Ont. \$172
F.o.b. Johnstown, Pa. \$172
F.o.b. Sheridan, Pa. \$172
F.o.b. Etna, Clairton, Pa. \$172
\$2.00 for each 1% above 82% Mn.
penalty, \$2.15 for each 1% below 78%.
Briquets—Cents per pound of briquet, delivered, 66% contained Mn.
Carload, bulk 10.45
Ton lots 12.05

Spiegeleisen

Contract prices gross ton, lump, f.o.b.
16-19% Mn 19-21% Mn
3% max. Si 3% max. Si
Palmerton, Pa. \$64.00 \$65.00
Pgh. or Chicago 65.00 66.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.
96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.
Carload, packed 29.75
Ton lots 31.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.
Carloads 21
Ton lots 30
Less ton lots 11

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb. of contained Mn. 18.15

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, delivered.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn.	25.25	27.10	28.30
0.10% max. C.	24.75	26.60	27.80
0.15% max. C.	24.25	26.10	27.30
0.30% max. C.	23.75	25.60	26.80
0.50% max. C.	23.25	25.10	26.30
0.75% max. C.	22.75	24.60	25.80
7.00% max. Si.	20.25	22.10	23.30

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C deduct 0.2¢.
Carload bulk 8.95
Ton lots 10.45
Briquet, contract basis carlots, bulk delivered, per lb of briquet. 10.30
Ton lots 11.95

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$77.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$73.50. Add \$1.00 per ton for each additional 0.50% Si up to and including 18%. Add \$1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.
96% Si, 2% Fe. 20.70
97% Si, 1% Fe. 21.10

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 1 lb Si briquets.
Carload, bulk 6.30
Ton lots 7.90

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.
25% Si. 17.00 75% Si. 13.50
50% Si. 11.30 85% Si. 14.55
90-95% Si 16.50

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.
Cast Turnings Distilled
Ton lots \$2.05 \$2.95 \$3.75
Less ton lots.. 2.40 3.30 4.55

Prices Continued on Page 172

ICES

t base

\$174

\$172

\$174

\$172

\$175

78% Mn.

oriquet

10.46

12.05

f.o.b.

11% Mn

max. Si

65.00

66.00

nts per

% max.

29.75

31.25

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18.15

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Less

28.30

27.80

27.30

26.80

26.30

23.30

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10.00

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11.90

Keokuk,

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KEOKUK ELECTRO-METALS COMPANY

Keokuk, Iowa • Wenatchee Division: Wenatchee, Washington

SALES AGENTS: Miller and Company

332 S. Michigan Avenue, Chicago 4, Illinois • 3504 Carew Tower, Cincinnati 2, Ohio • 407 N. Eighth Street, St. Louis 1, Missouri

A BETTER FORK TRUCK



HEAVY DUTY LIFTTRUCK

5, 7½, 10 ton cap.

Send for
Bulletin
No. 76

Agents in
Principal Cities
Responsible Distributors
Invited to Inquire

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KRAMER

Pioneer Manufacturers of
HEAVY DUTY
Industrial Materials
Handling Equipment

SILENT HOIST & CRANE CO., 851 63rd ST., BROOKLYN 20, N. Y.

Yes, but *when* are stainless
steel prices coming down
so that we can lower our
costs and still show a profit?

Right now. We can cut your costs
up to 30%. How? **WRITE TODAY!**

Submit specifications on sheet,
strip, rod, wire and tubing.
Large stocks in principal cities.

DEPENDABLE Sales 
CORPORATION
315 Gold St., Brooklyn 1, N. Y.

IRON AGE MARKETS & PRICES FOUNDED 1855

Ferrochrome

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads delivered. (65-72% Cr, 2% max Si.)

0.06% C	28.75	0.20% C	27.75
0.10% C	28.25	0.50% C	27.50
0.15% C	28.00	1.00% C	27.25
2.00% C			27.00
65-69% Cr, 4-9% C			26.50
62-66% Cr, 4-6% C, 6-9% Si			21.25

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	22.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, per lb chromium contained packed, delivered, ton lots. 97% min. Cr, 1% max. Fe.

0.20% max. C	\$1.00
0.50% max. C	1.00
.00 min. C	1.00

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.)

Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 20.50¢ per lb of contained Cr plus 11.30¢ per lb of contained Si.

Bulk 1-in. x down, 20.65¢ per lb contained Cr plus 11.50¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	17.90
Ton lots	21.00
Less ton lots	22.50

Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	19.25
Ton lots	21.55
Less ton lots	22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50.56% Cr, 4-6% Mn, 13.54-16.00% Si, 0.75 to 1.35% Zr, 3.50-5.00% C.

Ton lots	19.75
Less ton lots	21.00

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	15.75
Less ton lots	17.00

Graphidex No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

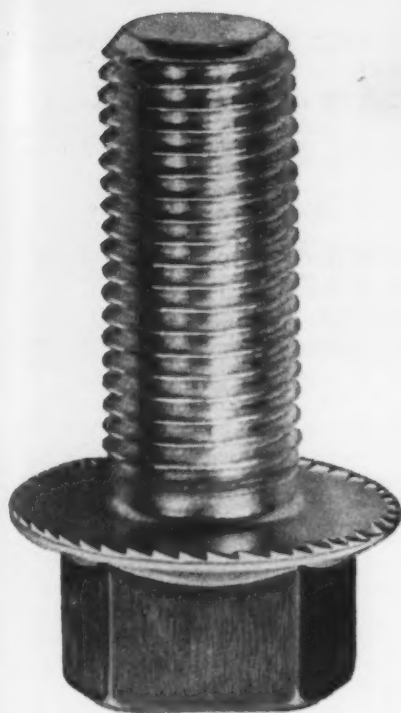
Carload packed	17.00
Ton lots to carload packed	18.00
Less ton lots	19.50

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

Prices Continued on Page 174



How New "Washer-less" SPIN-LOCK Screw Cuts Assembly Costs...

It's *one piece!* There's no washer to add... this time-wasting step is completely eliminated. RB&W's new SPIN-LOCK Screw can be efficiently hopper-fed.

Locking power is *positive*... no parts to cant or fall off. What's more, it fastens *neater* (flush with surface) and *safer* (no protrusions to catch fingers or clothes).

"SPIN-LOCK" has the features of the washer *built in*—thanks to the *patented* ratchet-like teeth on the underside of the head.

Specify it for faster, tighter assembly! Choice of heads: hexagonal, pan, truss or flat.

OTHER OUTSTANDING FEATURES

Holds tighter under extreme vibration.

Has physical qualities of high-carbon, heat-treated screws.

Teeth won't wear off or flatten—they're *case-hardened*.

Can be re-used—will still lock securely.

More locking power due to more locking *teeth* (they're on head's *outer edge*, for *greater contact*).

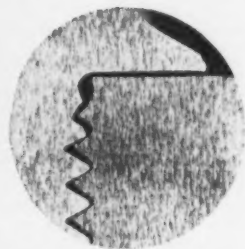
Makes excellent contact in electric equipment.

Drives easily in hard-to-reach spots. No extra parts to fall off.

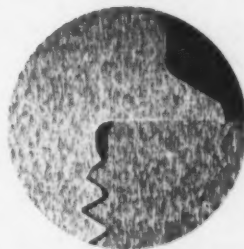
Cuts purchasing costs and trouble. Just one piece to buy—one requisition to fill.

Cuts inventory—only one piece to stock.

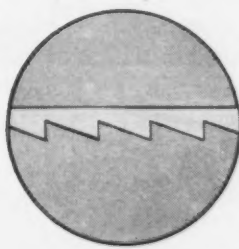
Unretouched photos* reveal superior performance of SPIN-LOCK Screw...



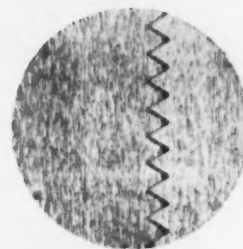
Teeth of the SPIN-LOCK Screw are touching, while the bearing surface still shows clearance. Further tightening causes flexing of head's rim. This assures constant and continuous pressure of teeth against the bearing surface.



Teeth of the SPIN-LOCK Screw are firmly embedded in the surface. They bite into the metal whenever a tendency to loosen develops.



Ratchet-like structure of teeth is the secret of SPIN-LOCK's tighter grip. Teeth are *angled* on advancing side to allow tightening... *vertical* in back to bite into the surface to prevent loosening.



The SPIN-LOCK Screw presses tightly against upside of thread... developing the *high tension* you need to fasten your product rigidly and *keep it that way*.

*Exact condition of contact between Screw and tapped holes... magnified 35 times.

**RUSSELL, BURDSALL & WARD
BOLT AND NUT COMPANY**

Port Chester, N. Y.

Send for Free Folder Giving Full Details!

Russell, Burdsall & Ward Bolt and Nut Company
Port Chester, N. Y.

Please send me free your SPIN-LOCK Screw folder, with complete data of types and specifications.

NAME.....
TITLE.....
COMPANY.....
ADDRESS.....
CITY.....ZONE.....STATE.....

RB&W

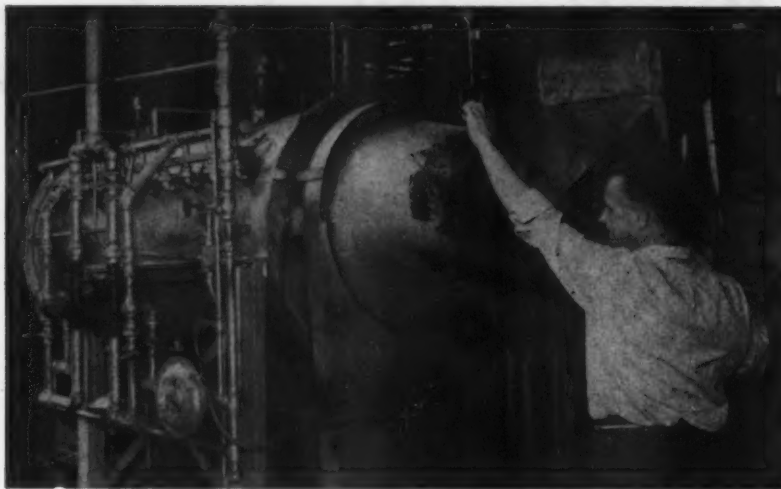
The Complete
Quality Line

Plants at Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Oakland. Sales agents at: Portland, Seattle. Distributors from coast to coast.

105 Years Making Strong the Things That Make America Strong

September 7, 1950

173



CONTINUOUS ROTARY HEAT TREATING FURNACES

For clean hardening, annealing, normalizing, carburizing, Ni-Carbing, etc., of many small parts.

The self-metering feed hopper arrangement permits the operator to pre load a one-half hour charge of work which is then continuously and uniformly processed without further attention, thereby eliminating costly man-hours. If desired, a continuous feeding mechanism may be employed which completely eliminates the need for an operator.

Write for Bulletin 801-4 today.



AMERICAN GAS FURNACE CO.

1004 LAFAYETTE ST.

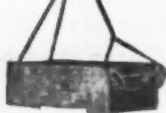
ELIZABETH, N. J.

EUCLID Cranes



**THE REPEATED CHOICE
of LEADERS in the
HEAVY INDUSTRIES**

**STANDARD MODELS
MEET OVER 90% OF
YOUR REQUIREMENTS**



For many successive years, Euclid Cranes have fulfilled the most rigid material handling requirements of long established heavy industries.

Proved performance with long trouble-free service has resulted in standardization and repeat orders. 1/2 to 100 tons capacity. Spans up to 100 ft. Write for literature.



THE EUCLID CRANE & HOIST CO.

1361 CHARDON ROAD • EUCLID, OHIO

IRON AGE MARKETS & PRICES FOUNDED 1855

Other Ferroalloys

Alsiifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	7.40
Ton lots	9.00
Calcium molybdate, 45-40%, f.o.b. Langeloth, Pa., per pound contained Mo	94
Ferrocolumbium, 50-60%, 2 in x D, contract basis, delivered, per pound contained Cb.	
Ton lots	\$3.50
Less ton lots	3.55
Ferro-Tantalum-columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta	\$2.67
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo	\$1.12
Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton	\$65.00
10 tons to less carload	75.00
Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	\$1.28
Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti	\$1.40
Less ton lots	\$1.45
Ferrotitanium, 15 to 19%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton	\$167.00
Ferrotungsten, standard, lump or 1/4 x down, packed, per pound contained W, 5 ton lots, delivered	\$2.25
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained V.	
Openhearth	\$2.90
Crucible	2.00
High speed steel (Primors)	2.10
Molybdc oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa.	95
bags, f.o.b. Washington, Pa., Langeloth, Pa.	94
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk, lump	11.00
Ton lots, bulk, lump	11.50
Less ton lots, lump	12.25
Vanadium pentoxide, 88-92% V ₂ O ₅ , contract basis, per pound contained V ₂ O ₅	\$1.20
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00
Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.	
Carload, bulk	6.00

Boron Agents

Contract prices per lb of alloy, del.	
Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	\$4.25
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	450
Less ton lots, per pound	500
Carbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4.5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed.	
Ton lots, per pound	10.00
Ferroboration, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots	\$1.20
F.o.b. Wash., Pa.; 100 lb. up	
10 to 14% B .....	.75
14 to 19% B	1.20
19% min. B	1.50
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1	95
No. 6	65
No. 79	65
Manganese-Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, delivered.	
Ton lots	\$1.40
Less ton lots	1.50
Nickel-Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	\$1.30
Silicaz, contract basis, delivered	
Ton lots	15.00

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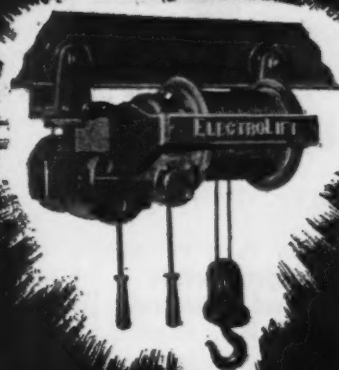
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The Clearing House

NEWS OF USED, REBUILT AND SURPLUS MACHINERY

Detroit Merry-Go-Round — The upward and onward trajectory of used and rebuilt machinery buying is continuing here. In very active demand are turret lathes, automatics, radial drills and press equipment. Standard items are not far behind.

As might be expected, there is a substantial amount of antiquated equipment available. Several dealers have reported attempts by sellers to tie these machines to sought after equipment in order to move them. These attempts have not been frequent and thus far have met with little success.

Prices Jump—Reports on prices range from "rising rapidly" to "fantastic." Some dealers declare that sellers have such inflated ideas about the worth of their machines that normal buying is entirely out of the question. The report is practically universal here that more equipment is moving out of warehouses than is coming back to replace sold items.

Fewer Tools Auctioned—There has been a noticeable reduction in the amount of equipment moving at auctions. This has been attributed to a decision on the part of most concerns who find themselves in a weakened condition financially to stay in business as long as possible. Such decisions naturally have an effect on the number of used machine tools reaching the dealer.

Philadelphia Upsurge—There has been a tremendous increase in buying in this area during the last 8 weeks. Reports of the activity of speculators here and elsewhere are rampant. They are trying to buy anything in the way of used equipment that could conceivably be used for armament production. Plant buyers are also scouring the market for machinery to get plants into readiness

to handle the increase in business. Dealers estimate that sales have more than doubled the previous volume.

Replacement Problems—The present volume has its gloomy side, as dealers are finding it difficult to replace the equipment they are selling so rapidly. Plants are even more cautious now about disposing of machinery. Prices of used equipment have more than followed the recent advances in new tools. Dealers are afraid that they will have to pay even higher prices to replace their inventories.

In many cases, sellers of used equipment are insistent on knowing who the ultimate buyer is. This is to prevent machinery from falling into the hands of speculators. There have been instances reported of prices being upped by several thousand dollars when the identity of the buyer became known.

Cincinnati NISA—Recent elections at the Cincinnati chapter of the National Industrial Service Assn. placed Burt Hendrickson of Glow Electric Co. in the position of president for the year 1950-1951. Edgar B. Conradi of Barkley Electric Co. was elected vice-president; Selden F. High of Sullivan Electric Co., secretary; and J. Bruce Matlock of Matlock Electric Co., treasurer.

Foreign Conditions—A partner in a large New York area used machinery firm has just returned from an extensive business trip to Europe and South America. Everywhere he found conditions the same: lack of dollar exchange. Machinery manufacturers in most areas find themselves in a 'sellers' market, though American heavy equipment would be bought if dollars were available. ECA spending is primarily for new machinery.